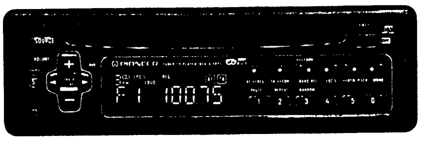
PIONEER
The Art of Entertainment

Service Manual

● DEH-615RDS/EW



ORDER NO.
CRT1622

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-615RDS EW,X1B/EW
DEH-515RDS EW,X1B/EW

COMPACT
disc
DIGITAL AUDIO

NOTE:

- **This additional service manual is designed to be used together with Model DEH-605RDS/EW Service Manual CRT1563. Refer to it for finding parts numbers and adjustment, etc. which are not shown in this manual.**
- **See the service manual CX-540(CRT1574) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of CX-540 series.**

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1. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number : CWE1374
Unit Name : Tuner Unit

MISCELLANEOUS

Circuit Symbol & No.	Part Name	Part No.
IC 1		PA2021B
IC 2		PA2022B
Q 1		3SK195
Q 2 202		2SC2712
Q 3		DTC124EU
Q 51		DTC124TU
Q 52		2SC4207
Q 53		2SA1586
Q 152		XP4601PA
Q 201		2SK435
D 1		1SV172
D 2 3 4		KV1410
D 5		MA151WK-MT
D 6 151 202		MA157-MR
D 201		MA157-MR
D 203		SVC203CP
L 1	Inductor	LCTBR12K2125
L 2 52	Ferri-Inductor	LAU150K
L 51	Ferri-Inductor	LAU2R2K
L 201	Ferri-Inductor	LAU4R7K
L 202	Inductor 1mH	CTF1026
L 203	Inductor	LAU390K
L 204	Ferri-Inductor	LAU680K
L 205	Ferri-Inductor	LAU330K
L 206	Inductor	CTF1198
T 1	Coil	CTC1078
T 2	Coil	CTE1077
T 3	Coil	CTC1077
T 4	Coil	CTC1079
T 51	Coil	CTC1119
T 202	Coil	CTB1102
T 203	Coil	CTE1076
T 204	Coil	CTE1085
T 205	Coil	CTE1086
CF 1 51 52		CTF1292
CF 201	Ceramic Filter	CTF1291
CF 202		CTF1300
X 151		CSS1308
X 201	Crystal Resonator	CSS1111
VR 51	Semi-fixed 47kΩ (B)	CCP1210
VR 52	Semi-fixed 68kΩ (B)	CCP1211
VR 151	Semi-fixed 10kΩ (B)	CCP1206
VR 152	Semi-fixed 22kΩ (B)	CCP1208
AR 1	Capacitor with Discharge Gap	DSP-201M

RESISTORS

Circuit Symbol & No.	Part Name	Part No.
R 1		RS1/16S223J
R 2		RS1/16S271J
R 3 10 16 18 20		RS1/16S223J
R 4		RS1/16S0R0J
R 6		RS1/16S680J
R 7 14		RS1/16S563J
R 8		RS1/16S152J
R 9		RS1/16S473J
R 11		RS1/16S474J
R 12		RS1/16S123J
R 13 15 217		RS1/16S563J
R 17 206		RS1/16S102J
R 21 22		RS1/16S560J
R 51		RS1/16S391J
R 52		RS1/16S182J
R 53		RS1/16S751J
R 55 157		RS1/16S682J
R 56		RS1/16S332J
R 58 203		RS1/16S102J
R 60		RS1/16S123J
R 72 74		RS1/16S391J
R 73		RS1/16S681J
R 101 164		RS1/16S224J
R 102 104 209 222		RS1/16S822J
R 103		RS1/16S563J
R 151 152		RS1/16S272J
R 153 202		RS1/16S103J
R 154		RS1/16S822J
R 155		RS1/16S123J
R 156		RS1/16S153J
R 158		RS1/16S183J
R 159 216		RS1/16S103J
R 160 161 207		RS1/16S225J
R 162 221		RS1/16S473J
R 163		RS1/16S222J
R 204 213		RS1/16S222J
R 205		RS1/16S823J
R 208		RS1/16S752J
R 214 218		RS1/16S333J
R 215		RS1/16S330J
R 220		RS1/16S100J

CAPACITORS

Circuit Symbol & No.	Part Name	Part No.
C 1		CCSRCH220J50
C 2		CCSRCH390J50
C 3 101 102 154 163 203 210 219 220 225		CKSQYB473K16
C 4		CCSRTH070D50
C 5 53		CCSRCH270J50
C 6		CKSRYB222K50
C 7		CCSRCH040C50
C 8 105		CKSRYB222K50
C 9 16		CCSRCH470J50
C 10		CCSRSH090D50
C 11		CKSRYB223K25
C 12		CCSRCH070D50
C 13		CCSRCH070D50
C 14 19 20 21 62 71 74 201 207 209		CKSRYB103K50
C 15 22 65 151 164 227		CKSQYB104K25

=====Circuit Symbol & No.	Part Name=====	Part No.
C 17		CCSRRH100D50
C 18		CCSRRH080D50
C 23		CEA3R3M50LL
C 24 29 73 106 152 153 213 236		CKSRYB223K25
C 25		CKSRYB682K50
C 26 28 231		CEA101M16LL
C 51 52 166 223		CKSRYB103K50
C 54		CCSRCH270J50
C 55		CKSQYB104K25
C 56 162 211		CEA010M50LL
C 57 64 66 237		CCSRCH101J50
C 60 155		CKSYB474K16
C 61		CEAR22M50LL
C 63 161		CKSQYB104K25
C 103		CKSQYB222K50
C 104		CEA010M50LL
C 156		CKSQYB563K16
C 158 212		CEA100M16LL
C 159		CKSRYB331K50
C 160		CKSYB105K16
C 165		CSZS2R2M10
C 202 233		CKSRYB332K50
C 204		CCSRCH120J50
C 205		CCSRCH560J50
C 206 221		CCSRCH680J50
C 208		CEA470M10LL
C 214 230		CKSRYB472K50
C 215 228		CKSRYB103K50
C 216		CCSRCH100D50
C 217		CCSRCH221J50
C 218 234		CEA220M16LL
C 222		CCSRCH150J50
C 224		CCSRUJ181J50
C 226		CEA4R7M35LL
C 229		CEAR68M50LL
C 232		CCSRCH390J50
C 235		CKSQYB473K16

Unit Number : CWX1773
Unit Name : Key Board Unit

MISCELLANEOUS

Circuit Symbol & No.	Part Name	Part No.
IC 901		PDX002A
IC 902		RPM-678CBR
Q 901 902		2SB1132
Q 903		UN2211
D 901 902		DA204K
D 903		MA3051L
L 901	Coil	LCTB150K3216
X 901		CSS1084
IL 901 902 903	Lamp 14V 40mA	CEL1398
IL 904 905 906	Lamp 14V 40mA	CEL1397
LCD901	LCD	CAW1309

RESISTORS

Circuit Symbol & No.	Part Name	Part No.
R 901 902 903 908		RS1/8S222J
R 904 906		RS1/10S472J
R 905 907		RS1/10S332J
R 916 917 918 919		RS1/10S471J
R 948		RS1/10S470J

CAPACITORS

Circuit Symbol & No.	Part Name	Part No.
C 901 902 903 904		CKSQYB103K25
C 905		CEA470M6R3LS

=====Circuit Symbol & No.	Part Name=====	Part No.

Unit Number : CWX1796
Unit Name : Control Unit

MISCELLANEOUS

Circuit Symbol & No.	Part Name	Part No.
IC 1001		UPC2571GS
IC 1201		UPD63700GF1
IC 1301		PA3026
IC 1302		XRA6285FP
IC 1303		NJM4558M
IC 1601		TC9268F
IC 1602		TA2063F
IC 1701		PQ05TZ51
Q 1001		2SB1260
Q 1601 1602		2SD1781K
Q 1603		2SB709A
D 1601		MA151WA-MN
D 1701 1702 1703 1704		SC016-2
D 1801 1802	Chip LED	CL200IRX
L 1601	Inductor	LCTBR39K2125
X 1601	Crystal Resonator	CSS1067
S 1801 1802	Switch(Home,Clamp)	CSN1028
VR1001	Semi-fixed 2.2kΩ (B)	CCP1177
VR1002	Semi-fixed 22kΩ (B)	CCP1183
VR1003 1004	Semi-fixed 47kΩ (B)	CCP1185

RESISTORS

Circuit Symbol & No.	Part Name	Part No.
R 1001		RS1/8S100J
R 1002		RS1/8S120J
R 1003 1201 1307 1309		RS1/16S103J
R 1004 1013 1024 1025 1311 1315 1318 1708		RS1/16S102J
R 1005		RS1/16S823J
R 1006		RS1/16S182J
R 1007		RS1/16S333J
R 1011 1012		RS1/16S683J
R 1014 1310		RS1/16S473J
R 1018		RS1/16S622J
R 1019		RS1/16S563J
R 1020		RS1/16S622J
R 1021		RS1/16S513J
R 1022		RS1/16S133J
R 1027		RS1/16S183J
R 1028		RS1/16S822J
R 1301 1302		RS1/16S222J
R 1303 1606 1607		RS1/16S223J
R 1304		RS1/16S123J
R 1305 1306 1705		RS1/16S332J
R 1308		RS1/16S163J
R 1314		RS1/16S0R0J
R 1317		RS1/16S473J
R 1601		RS1/16S301J
R 1604 1605		RS1/16S102J
R 1608 1609		RS1/16S162J
R 1610		RS1/16S103J
R 1801 1802		RS1/8S821J

CAPACITORS

Circuit Symbol & No.	Part Name	Part No.
C 1001 1008 1010 1011 1303		CKSRYB102K50
C 1002 1609 1706		CEV101M6R3
C 1003		CKSQYB104K16
C 1004		CEV470M6R3
C 1005		CCSRCH101J50
C 1006		CKSRYB561K50
C 1007 1704		CKSYB334K16
C 1009		CCSRCH181J50
C 1013		CKSRYB103K50
C 1014		CCSRCH220J50

=====Circuit Symbol & No.	Part Name=====	Part No.
C 1015 1016 1017 1018 1201 1202		CKSYF105Z16
C 1021		CKSYB104K16
C 1022		CKSRYB332K50
C 1023		CKSRYB561K50
C 1203		CKSRYB471K50
C 1301 1302		CKSRYF683Z25
C 1304		CKSRYB152K50
C 1305		CKSRYB271K50
C 1307 1310 1605 1608		CKSRYB103K50
C 1308		CKSRYF103Z50
C 1309		CEV470M16
C 1601		CCSRCH151J50
C 1602		CCSRCH100D50
C 1603 1604 1705		CKSYB224K16
C 1606 1607		CCSRCH090D50
C 1612		CEV220M6R3
C 1613 1614		CEV4R7M35
C 1701 1702		CCSRCH100D50
C 1703		CEV220M16

Unit Number : CWX1826
Unit Name : Tuner Amp Unit

MISCELLANEOUS

=====Circuit Symbol & No.	Part Name=====	Part No.
IC 471		NJM4558L
IC 481		LC7538JMHS
IC 482 483		NJM4558MD
IC 501		LC72140M
IC 551		PA3029B
IC 601		PD4572A
IC 771		CWV1051
IC 961		PAJ001A
IC 971		PA2023A
Q 451 452 502 504 508 771 773		2SC2412K
Q 453 454 455 456		DTC114TK
Q 457		UN2111
Q 501		2SC3295
Q 503		2SC3098
Q 505 509		2SK208
Q 551 601 604 606 864 957 983		DTC114EK
Q 602 863 982		DTA114EK
Q 603 605 956		2SA1674
Q 607		2SA1015
Q 772		DTC124EK
Q 851 852		2SC2412K
Q 861 862		2SC2412K
Q 981		2SD2396
D 501 971		MA151WK-MT
D 504 505		MA3027H
D 771 972 973		1SS133
D 772		MTZ4R7B
D 861		MA151WA-MN
D 951 952 957 961		ERA15-02
D 956		ERA15-10
D 984		HZS9LC3
L 501	Ferri-Inductor	CTF-157
L 502	Ferri-Inductor	LAU220K
L 601	Ferri-Inductor	LAU470K
L 602	Ferri-Inductor	LAU470K
L 603	Ferri-Inductor	LAU470K
TH 601	Thermistor	CCX1008
IB 551 552		CWW1338
IB 601		CWW1336
IB 602		CWW1337
X 501	Crystal Resonator	CSS1011
X 601	Crystal Resonator	CSS1023
VR 771	Semi-fixed 2.2kΩ (B)	VRMB6VS222
	Tuner Unit	CWE1374
BZ 601	Buzzer	CPV1011

RESISTORS

=====Circuit Symbol & No.	Part Name=====	Part No.
R 451 452 514 515 521 522 602 604 618 619		RS1/10S473J
R 453 454		RS1/10S0R0J
R 455 456 457 458 463 464 529 533 536 538		RS1/10S102J
R 459 460 505 865 866 952 956		RS1/10S223J
R 471 472		RS1/10S272J
R 473 474		RD1/4PS163JL
R 475 476		RS1/10S273J
R 477 478		RS1/10S331J
R 481 482		RS1/10S272J
R 485 486 487 566 567 568 569		RD1/4PS472JL
R 488 489 490 491 492 493 494 495		RS1/10S103J
R 503 508 509 512 516 530 551 552 553 554		RS1/10S472J
R 504 511 513 534 535 601 603 863		RS1/10S222J
R 506		RS1/10S221J
R 507 974		RS1/10S103J
R 510		RS1/10S123J
R 517 518 519 520		RD1/4PS222JL
R 523		RS1/10S563J
R 524 784		RS1/10S101J
R 525 782		RS1/10S332J
R 526		RS1/10S331J
R 527		RS1/10S821J
R 528		RS1/10S680J
R 531		RS1/8S103J
R 532 781		RS1/10S152J
R 539 540 541 605 606 616 652 657 658 659		RS1/10S102J
R 542		RS1/10S822J
R 545 546		RS1/8S0R0J
R 548		RS1/10S330J
R 549		RD1/4PS102JL
R 555 556		RS1/10S2R2J
R 557		RD1/4PS102JL
R 558 559 560 561 562 563 564 565		RD1/4PS2R2JL
R 570		RD1/4PS752JL
R 571		RS1/10S560J
R 573		RS1/10S682J
R 613		RS1/10S473J
R 617		RS1/8S473J
R 620 963		RS1/10S683J
R 621 634 772 773 774 775 776 777 778		RS1/10S473J
R 622 624		RD1/4PS222JL
R 623 625		RS1/10S473J
R 626		RS1/10S183J
R 627 629 632 957 973 984		RS1/10S472J
R 628 630 958		RD1/4PS272JL
R 633		RD1/4PS472JL
R 645 646 647		RS1/10S472J
R 648		RS1/10S682J
R 651		RD1/4PS102JL
R 653 654 655 656		RS1/10S681J
R 660 662 663 664 780 783 972		RS1/10S102J
R 670 671 672		RD1/4PS472JL
R 673		RD1/4PS103JL
R 771		RS1/10S471J
R 851 852		RD1/4PS821JL
R 853 854		RS1/10S222J
R 855 856		RS1/10S223J
R 861 862		RD1/4PS821JL
R 864		RS1/8S222J
R 951		RS1/10S0R0J
R 959		RD1/4PS513JL
R 961		RS1/8S823J
R 962		RS1/10S363J
R 964		RD1/4PS473JL
R 965		RD1/4PS273JL

=====Circuit Symbol & No.	Part Name=====	Part No.
R 966		RS1/10S103J
R 971		RS1/10S104J
R 981		RD1/4PS471JL
R 982		RD1/4PS221JL
R 983		RS1/10S392J
CAPACITORS		
C 451 452		CEAS4R7M25
C 471 472		CEAS100M16
C 473 474		CCSQCH560J50
C 475 951 963	1000 μF/16V	CCH1149
C 476 477		CKSQYB393K25
C 481 482 861		CEAS100M16
C 483 484 485 486 491 492 553 567 568 569		CEA100M16LL
C 487 488		CKSYB224K16
C 489 490		CKSQYB272K50
C 493 494 506 507		CKSQYB223K25
C 495 496		CKSQYB562K50
C 497 498 499 500		CCSQCH330J50
C 501 505 509 512 517		CCSQCH101J50
C 502 607 982		CKSQYB473K25
C 504 510 514 523 772 952 954		CKSQYB103K25
C 511		CCSQCH681J50
C 513		CKLSR473K16
C 515		CFTNA474J50
C 516		CEA4R7M35LL
C 518 519		CCSQCH120J50
C 520	4.7 μF/16V	CCH1165
C 551 552 554 555 606		CKSQYB102K50
C 556	3300 μF/16V	CCH1150
C 557 558 609 956		CKSQYB104K25
C 559 560 561 562 563 564 565 566		CQMA104J50

=====Circuit Symbol & No.	Part Name=====	Part No.
C 570 608		CEA100M16LL
C 571 572 573 574		CCSQCH220J50
C 575		CEAS4R7M25
C 601		CKSQYB183K25
C 603		CKSQYB104K25
C 604 605		CCSQCH150J50
C 610		CKSQYB104K25
C 612 613		CKSQYB102K50
C 771		CEAR47M50LL
C 773		CEA100M16LL
C 851		CEAS100M16
C 852		CEA100M16LL
C 853 854		CCSQCH221J50
C 862		CEA100M16LL
C 863 864		CCSQCH221J50
C 962		CEAR22M50LL
C 964		CEA2R2M50LL
C 965		CEA220M6R3LL
C 971		CEA010M50LL
C 972		CEAS470M10
C 973		CEAS101M10
C 974		CEAS221M10
C 975	330 μF/10V	CCH1181
C 981		CEAS331M16

Unit Number :
Unit Name : Detector P.C.Board

P 1 2	Photo Transistor	PT4800

Miscellaneous Parts List

	PU Unit	CGY1031
M 1	Motor Unit (Spindle)	CXA5703
M 2	Motor Unit (Carriage)	CXA7150
M 3	Motor Unit (Loading)	CXA6456

- The DEH-615RDS/X1B/EW, DEH-515RDS/EW, and DEH-515RDS/X1B/EW Parts Lists enumerate the parts which differ from those enumerated in the DEH-615RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer,accordingly. The DEH-615RDS/EW Parts List is given on page 2.

Tuner Amp Unit

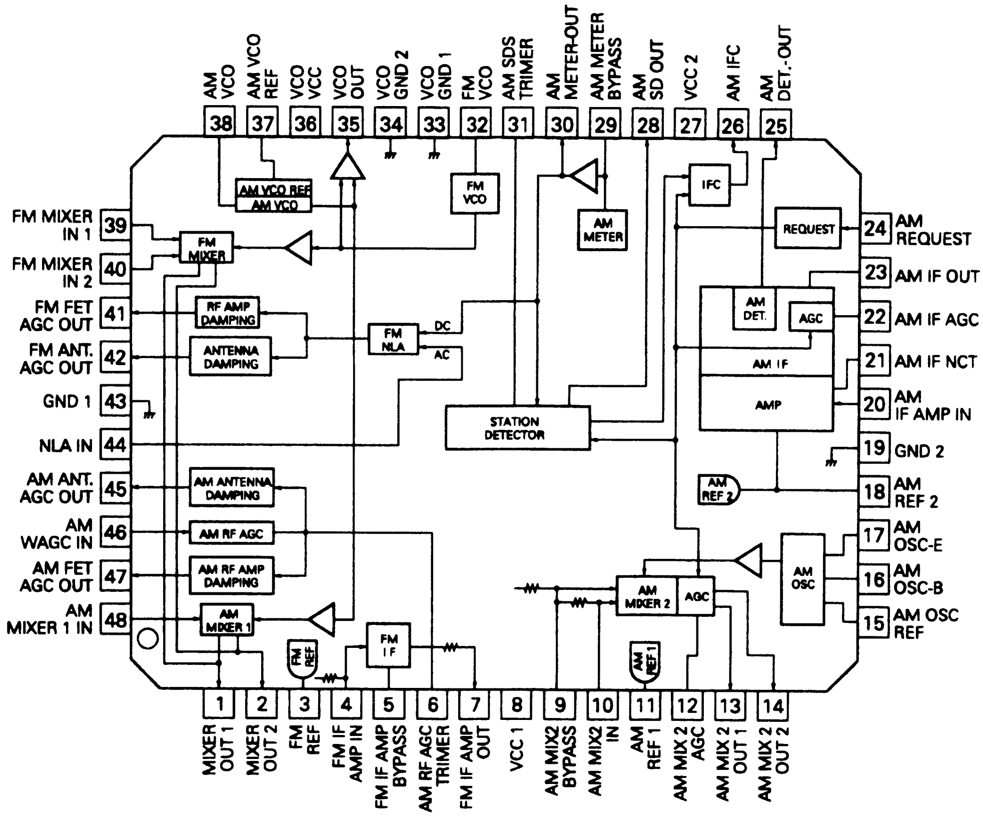
	DEH-615RDS/EW, X1B/EW	DEH-515RDS/EW,X1B/EW
Circuit Symbol & No.	Part No.	Part No.
Q851,852	2SC2412K	•••••
R609	•••••	RS1/10S0R0J
R613	RS1/10S473J	•••••
R851,852	RD1/4PS821JL	•••••
R853,854	RS1/10S222J	•••••
R855,856	RS1/10S223J	•••••
C851	CEAS100M16	•••••
C852	CEA100M16LL	•••••
C853,854	CCSQCH221J50	•••••

Key Board Unit

	DEH-615RDS/EW, X1B/EW	DEH-515RDS/EW,X1B/EW
Circuit Symbol & No.	Part No.	Part No.
IC902	PRM-678CBR	•••••
R948	RS1/10S470J	•••••
C905	CEA470M6R3LS	•••••

● ICs

PA2021B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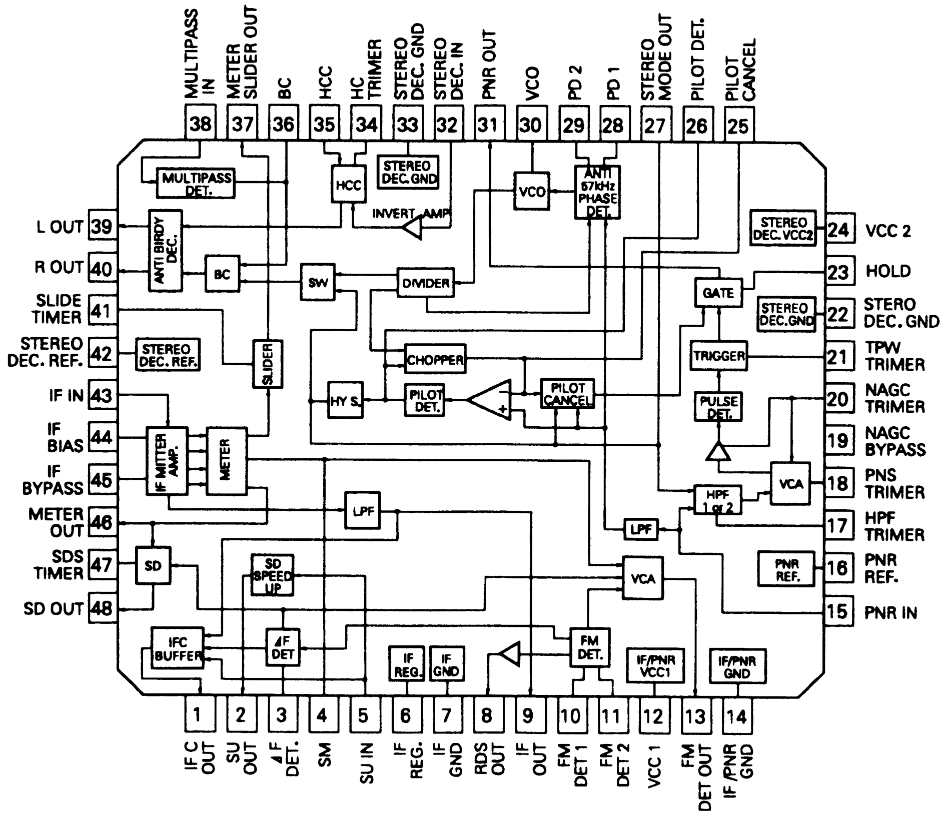
37 AM VCO REF
36 VCO VCC
35 VCO OUT
34 VCO GND 2
33 VCO GND 1
32 FM VCO
31 AM SDS TRIMER
30 AM METER-OUT
29 AM METER BYPASS
28 AM SD OUT
27 VCC 2
26 AM IFC
25 AM DET. OUT
24 AM REQUEST
23 AM IF OUT
22 AM IF AGC
21 AM IF NCT
20 AM IF AMP IN
19 GND 2
18 AM REF 2
17 AM OSC-E
16 AM OSC-B
15 AM OSC REF
39 FM MIXER IN 1
40 FM MIXER IN 2
41 FM FET AGC OUT
42 FM ANT. AGC OUT
43 GND 1
44 NLA IN
45 AM ANT. AGC OUT
46 AM WAGC IN
47 AM FET AGC OUT
48 AM MIXER 1 IN
1 MIXER OUT 1
2 MIXER OUT 2
3 FM REF
4 FM IF AMP IN
5 FM IF AMP BYPASS
6 AM RF AGC TRIMER
7 FM IF AMP OUT
8 VCC 1
9 AM MIX2 BYPASS
10 AM MIX2 IN
11 AM REF 1
12 AM MIX 2 AGC
13 AM MIX 2 OUT 1
14 AM MIX 2 OUT 2
AM VCO REF
AM VCO
FM VCO
AM METER
IFC
REQUEST
FM MIXER
RF AMP DAMPING
ANTENNA DAMPING
FM NLA
DC
AC
STATION DETECTOR
AM DET.
AGC
AM IF
AMP
AM REF 2
AM ANTENNA DAMPING
AM RF AGC
AM RF AMP DAMPING
AM MIXER 1
FM REF
FM IF
AM MIXER 2
AGC
AM REF 1
AM OSC

PA2022B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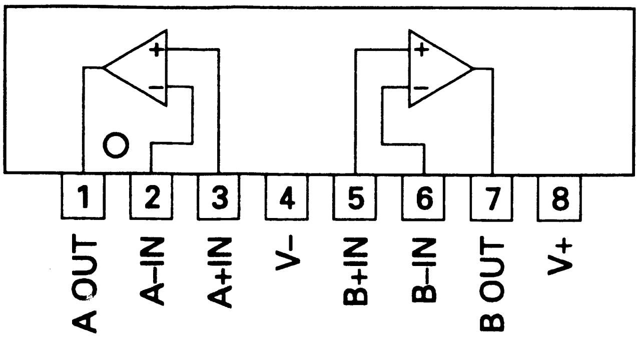
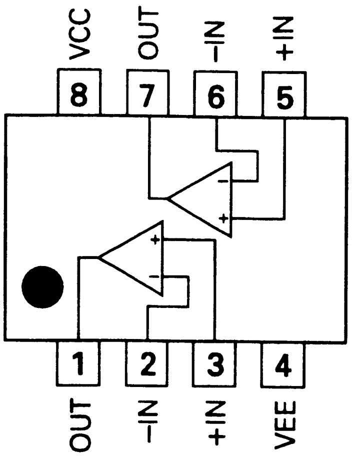
37 METER SLIDER OUT
36 BC
35 HCC
34 HC TRIMER
33 STEREO DEC. GND
32 STEREO DEC. IN
31 PNR OUT
30 VCO
29 PD 2
28 PD 1
27 STEREO MODE OUT
26 PILOT DET.
25 PILOT CANCEL
24 VCC 2
23 HOLD
22 STERO DEC. GND
21 TPW TRIMER
20 NAGC TRIMER
19 NAGC BYPASS
18 PNS TRIMER
17 HPF TRIMER
16 PNR REF.
15 PNR IN
39 L OUT
40 R OUT
41 SLIDE TIMER
42 STEREO DEC. REF.
43 IF IN
44 IF BIAS
45 IF BYPASS
46 METER OUT
47 SDS TIMER
48 SD OUT
1 IFC OUT
2 SU OUT
3 ⊿F DET.
4 SM
5 SU IN
6 IF REG.
7 IF GND
8 RDS OUT
9 IF OUT
10 FM DET 1
11 FM DET 2
12 VCC 1
13 FM DET OUT
14 IF/PNR GND
MULTIPASS DET.
HCC
STEREO DEC. GND
VCO
ANTI 57kHz PHASE DET.
INVERT AMP
STEREO DEC. VCC2
ANTI BIRDY DEC.
BC
SW
DIVIDER
GATE
STEREO DEC. GND
STEREO DEC. REF.
SLIDER
CHOPPER
TRIGGER
HYS.
PILOT DET.
PILOT CANCEL
PULSE DET.
IF MITTER AMP.
METER
VCA
HPF 1 or 2
LPF
LPF
SD
SD SPEED UP
VCA
PNR REF.
IFC BUFFER
⊿F DET
IF REG.
IF GND
FM DET.
IF/PNR VCC1
IF/PNR GND

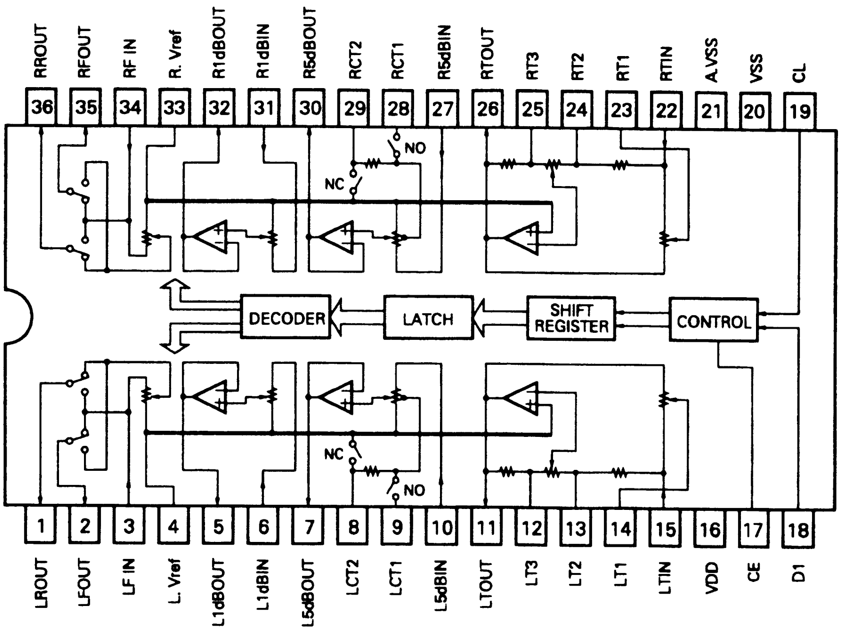
NJM4558L


1 A OUT
2 A–IN
3 A+IN
4 V–
5 B+IN
6 B–IN
7 B OUT
8 V+

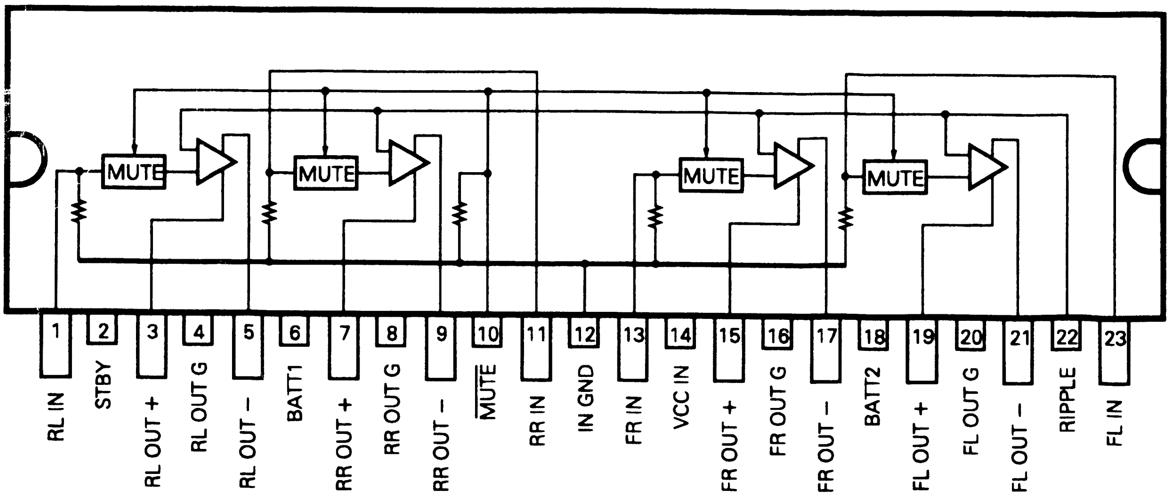
NJM4558MD


8 VCC
7 OUT
6 –IN
5 +IN
1 OUT
2 –IN
3 +IN
4 VEE

*LC7538JMHS


36 RROUT
35 RFOUT
34 RF IN
33 R. Vref
32 R1dBOUT
31 R1dBIN
30 R5dBOUT
29 RCT2
28 RCT1
27 R5dBIN
26 RTOUT
25 RT3
24 RT2
23 RT1
22 RTIN
21 A.VSS
20 VSS
19 CL
NO
NC
DECODER
LATCH
SHIFT REGISTER
CONTROL
NC
NO
1 LROUT
2 LFOUT
3 LF IN
4 L. Vref
5 L1dBOUT
6 L1dBIN
7 L5dBOUT
8 LCT2
9 LCT1
10 L5dBIN
11 LTOUT
12 LT3
13 LT2
14 LT1
15 LTIN
16 VDD
17 CE
18 D1

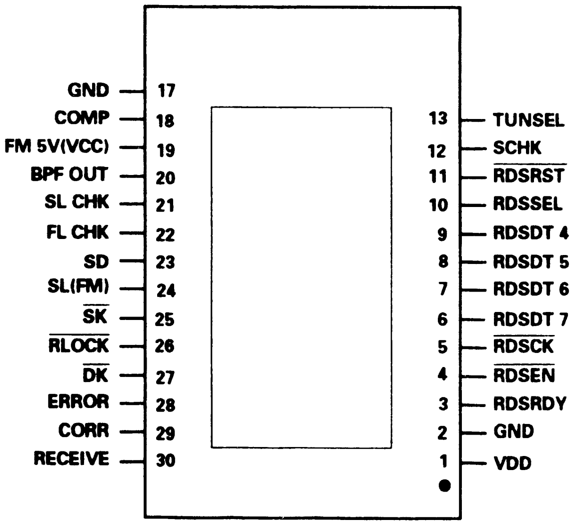
PA3029B


MUTE
MUTE
MUTE
MUTE
1 RL IN
2 STBY
3 RL OUT +
4 RL OUT G
5 RL OUT –
6 BATT1
7 RR OUT +
8 RR OUT G
9 RR OUT –
10 $\overline{\text{MUTE}}$
11 RR IN
12 IN GND
13 FR IN
14 VCC IN
15 FR OUT +
16 FR OUT G
17 FR OUT –
18 BATT2
19 FL OUT +
20 FL OUT G
21 FL OUT –
22 RIPPLE
23 FL IN

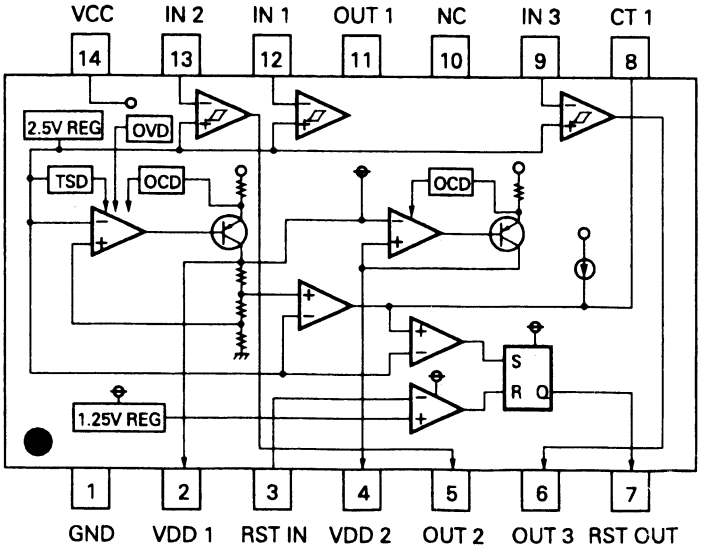
● Pin Functions (CWV1051)

Pin No.	Pin Name	I/O	Function and Operation
1	VDD		Power supply for RDS controller
2	GND		GND
3	RDSRDY	I	Ready input from system control IC
4	$\overline{\text{RDSEN}}$	O	Enable output for system control IC
5	$\overline{\text{RDSCK}}$	I	Serial clock input from system control IC
6-9	RDSDT 7-4	I/O	Data input/output to system control IC
10	RDSSEL	I	Select input from system control IC
11	$\overline{\text{RDSRST}}$	I	Reset input from system control IC
12	SCHK	I	Unit check input
13	TUNSEL	I	FM/AM tuner unit select input
14-16	VACANT		
17	GND		GND
18	COMP	I	FM composite signal input
19	FM 5V(VCC)		Power supply decoder
20	BPF OUT	O	Band pass filter test output
21	SL CHK	O	SL check output
22	FL CHK	O	FL check output
23	SD	I	RDS decode control input
24	SL(FM)	I	Signal level input from tuner
25	$\overline{\text{SK}}$	I	SK signal detect input
26	$\overline{\text{RLOCK}}$	O	RDS test output
27	$\overline{\text{DK}}$	O	DK signal detect output
28	ERROR	O	Disapprove of error correction output
29	CORR	O	Error output
30	RECEIVE	O	RDS synchronizing test output

CWV1051


GND 17
COMP 18
FM 5V(VCC) 19
BPF OUT 20
SL CHK 21
FL CHK 22
SD 23
SL(FM) 24
$\overline{\text{SK}}$ 25
$\overline{\text{RLOCK}}$ 26
$\overline{\text{DK}}$ 27
ERROR 28
CORR 29
RECEIVE 30
13 TUNSEL
12 SCHK
11 $\overline{\text{RDSRST}}$
10 RDSSEL
9 RDSDT 4
8 RDSDT 5
7 RDSDT 6
6 RDSDT 7
5 $\overline{\text{RDSCK}}$
4 $\overline{\text{RDSEN}}$
3 RDSRDY
2 GND
1 VDD

PAJ001A

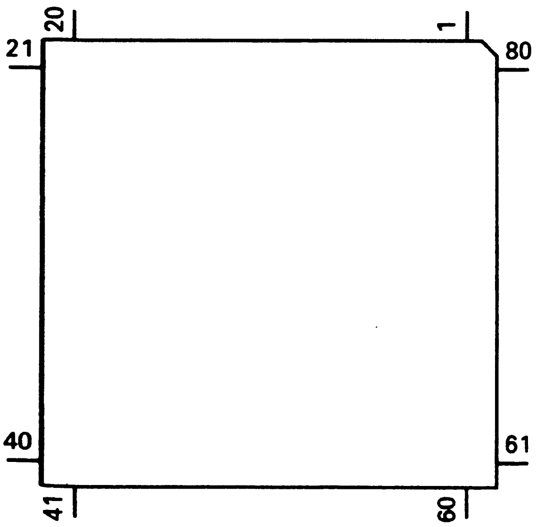

VCC 14
IN 2 13
IN 1 12
OUT 1 11
NC 10
IN 3 9
CT 1 8
2.5V REG
OVD
TSD
OCD
OCD
1.25V REG
S
R Q
1 GND
2 VDD 1
3 RST IN
4 VDD 2
5 OUT 2
6 OUT 3
7 RST OUT

● Pin Functions(PD4572A)

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	NC			Not used
2	$\overline{RDSRST}$	O	C	Reset output for RDS IC
3	RDSSEL	O	C	Select output for RDS IC
4	AVSS	I		A/D converter GND
5	$\overline{RDSEN}$	O	C	Enable output for RDS IC
6	RDSRDY	I		Ready input from RDS IC
7	AVREF1	I		D/A converter reference voltage
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	$\overline{RST}$	O	C	LSI reset output
11	RDSDI	I		Serial data input for RDS IC
12	RDSDO	O	C	Serial data output for RDS IC
13	$\overline{RDSCK}$	O	C	Serial clock output for RDS IC
14	XA0	O		Control signal distinguishing data from microcomputer
15	$\overline{XSTB}$	O	C	LSI strobe output
16	XSI	I		LSI data input
17	XSO	O	C	LSI data output
18	$\overline{XSCK}$	O	C	LSI clock output
19	CONT	O	C	Servo driver power supply control
20	LOAD	O	C	Loading motor LOAD control
21	EJET	O	C	Loading motor EJECT control
22	CD5VON	O	C	CD +5V control
23	NC			Not used
24	CDMUTE	O	C	CD mute output
25	$\overline{TMUTE}$	O	C	Tuner mute output
26	VDCONT	I	C	VD control input
27	FOK	I		FOK signal input
28	MIRR	I		Mirror detector input
29	LOCK	I		Spindle lock detector input
30	CLAMP	I		Disc clamp sense input
31	$\overline{HOME}$	I	C	Home position detector input
32	FECNT	O	C	FE output control pin
33	VSS			GND
34	VDSENS	I		VD over voltage sense input
35	VMC	O	C	Loading motor driver power supply
36	NC			Not used
37	$\overline{ADENA}$	O	N	A/D converter reference voltage output
38	NC			Not used
39	CDPW	O	N	CD power control
40	NC			Not used
41	SYSPW	O	C	System power supply control output
42	BLGT	O	C	LCD back light control output
43	VLCDPW	O	C	Power supply control output for LCD
44	$\overline{SWVDD}$	O	C	Key board unit power supply control output
45	PEE	O	C	Beep tone output
46	VDT	O	C	Data output for electronic volume
47	VST	O	C	Strobe pulse output for electronic volume
48	VCK	O	C	Clock output for electronic volume
49	PCL	O	C	Clock adjustment output
50	$FM/\overline{AM}$	O	C	FM/AM power select output
51	MONO	O	C	Forced mono output
52-55	SIMK0-3	I		Model select input
56	MUTE	O	C	Mute output
57	NC			Not used
58	NC			Not used
59	SD	I		SD input
60	$\overline{RESET}$	I		Reset input

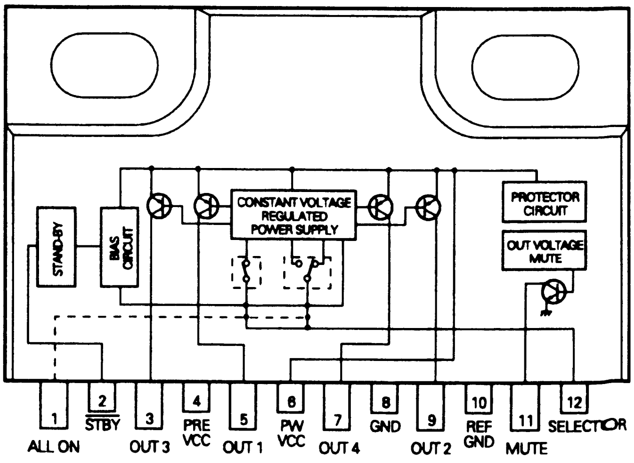
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
61	NC			Not used
62	$\overline{\text{BSENS}}$	I		Back up power sense input
63	$\overline{\text{ASENS}}$	I		ACC power sense input
64	PDI	I		PLL data input
65	PDO	O	C	Data output for PLL IC
66	PCK	O	C	Serial clock output for PLL IC
67	PCE	O	C	Chip enable output for PLL IC
68	VDD			Power supply
69,70	X2,X1			Crystal oscillator connection pin
71	IC			Connect to GND
72	XT2			Not used
73	TESTIN	I		Test program start input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0	I		A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		Temperature detector
78	DINC	I		Disc insert sense input
79	EJTD	I		Disc eject position sense input
80	DSENS	I		Grille detach sense

*PD4572A


20
1
21
80
40
61
41
60

I/O Format	Meaning
C	CMOS
N	N channel open drain

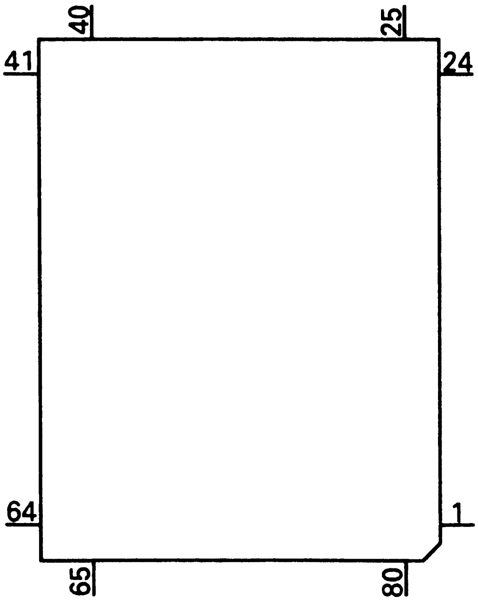
PA2023A


STAND-BY
BIAS CIRCUIT
CONSTANT VOLTAGE REGULATED POWER SUPPLY
PROTECTOR CIRCUIT
OUT VOLTAGE MUTE
1
ALL ON
2
$\overline{\text{STBY}}$
3
OUT 3
4
PRE VCC
5
OUT 1
6
PW VCC
7
OUT 4
8
GND
9
OUT 2
10
REF GND
11
MUTE
12
SELECTOR

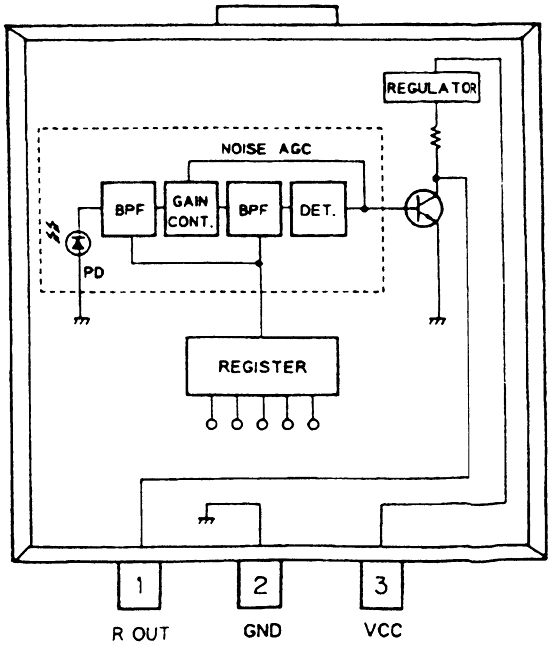
● Pin Functions (PDX002A)

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	X1		Crystal oscillator connection pin
3	X0		Crystal oscillator connection pin
4	RESET	I	Reset Input
5,6	MOD1,0	I	Model select input
7	DILMX	O	Function LED select output
8	KYDT	O	Key data output
9	DPDT	I	Display data input
10	REMIN	I	Remote control pulse input
11	SILMO	O	Illumination color select output
12	SILMG	O	Function LED select output
13–16	$\overline{KD4}$-$\overline{KD1}$	I	Key sense input
17–22	$\overline{KDT6}$-$\overline{1}$	O	Key strobe output
23	VDD		5V
24–34	NC		Not used
35–73	SEG38–0	O	LCD segment output
74–77	COM3–0	O	LCD common output
78–80	VLCD–V1		Power supply terminal

*PDX002A


40
25
41
24
64
1
65
80

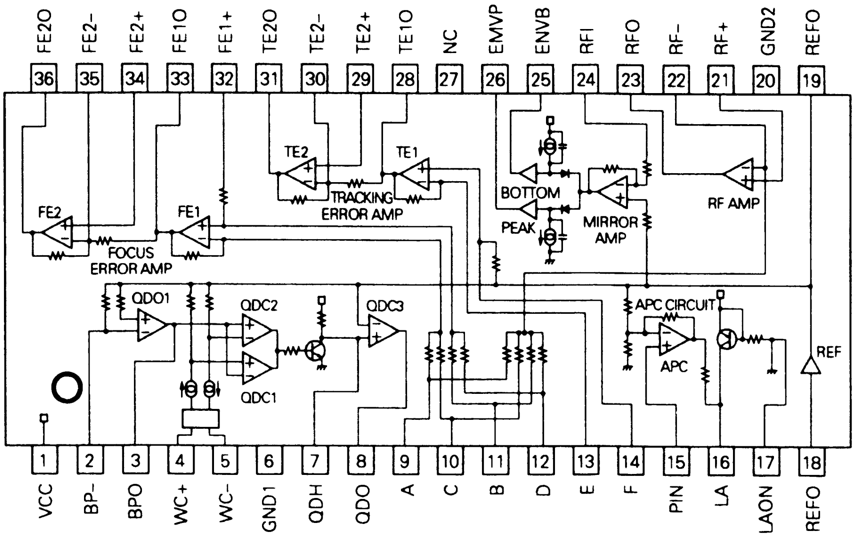
*RPM-678CBR


REGULATOR
NOISE AGC
BPF
GAIN CONT.
BPF
DET.
PD
REGISTER
1
2
3
R OUT
GND
VCC

● Pin Functions(UPC2571GS)

Pin No.	Pin Name	I/O	Function and Operation
1	VCC		VCC
2	BP-	I	TE zero cross amplifier input
3	BPO	O	TE zero cross amplifier output
4	WC+		Not used
5	WC-		Not used
6	GND1		GND
7	QDH		Not used
8	QDO		Not used
9	A	I	A signal input
10	C	I	C signal input
11	B	I	B signal input
12	D	I	D signal input
13	E	I	E signal input
14	F	I	F signal input
15	PIN	I	APC amplifier input
16	LA	O	APC amplifier output
17	LAON		APC amplifier ON/OFF switching
18	REFI	I	Reference voltage input
19	REFO	O	Reference voltage output
20	GND2		GND
21	RF+	I	RF amplifier non-inverting input
22	RF-	I	RF amplifier inverting input
23	RFO	O	RF amplifier output
24	RFI		Not used
25	ENVB		Not used
26	ENBP		Not used
27	NC		Non connection
28	TE1O	O	Tracking error amplifier 1 output
29	TE2+	I	Tracking error amplifier 2 non-inverting input
30	TE2-	I	Tracking error amplifier 2 inverting input
31	TE2O	O	Tracking error amplifier 2 output
32	FE1+	I	Focus error amplifier 1 non-inverting input
33	FE1O	O	Focus error amplifier 1 output
34	FE2+	I	Focus error amplifier 2 non-inverting input
35	FE2-	I	Focus error amplifier 2 inverter input
36	FE2O	O	Focus error amplifier 2 output

UPC2571GS

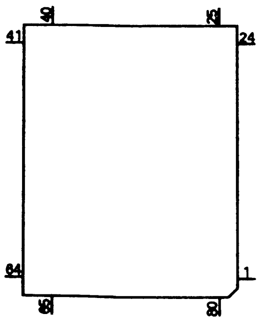

FE2O
FE2-
FE2+
FE1O
FE1+
TE2O
TE2-
TE2+
TE1O
NC
EMVP
ENVB
RFI
RFO
RF-
RF+
GND2
REFO
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
TE2
TE1
TRACKING
ERROR AMP
BOTTOM
PEAK
MIRROR
AMP
RF AMP
FE2
FE1
FOCUS
ERROR AMP
QDO1
QDC2
QDC3
QDC1
APC CIRCUIT
APC
REF
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
VCC
BP-
BPO
WC+
WC-
GND1
QDH
QDO
A
C
B
D
E
F
PIN
LA
LAON
REFO

● Pin Functions(UPD63700GF1)

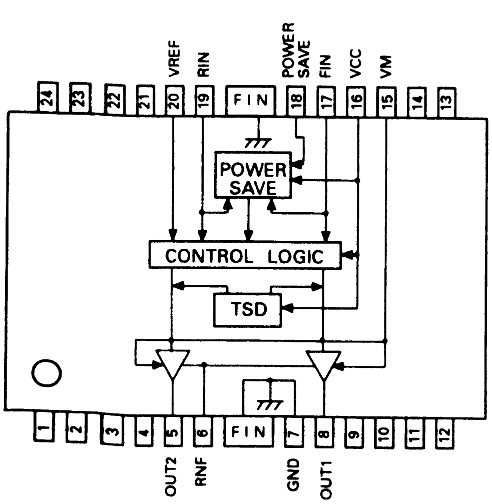
Pin No.	Pin Name	I/O	Function and Operation
1	D.GND		Logic circuit GND
2	RFOK	O	RFOK detection signal output terminal
3	MIRR	O	MIRR detection signal output terminal
4	TBC	I	Tracking filter bank switching terminal
5	HOLD	I	Hold control signal input terminal
6	D.VDD		VDD for logic circuit
7	$\overline{\text{RST}}$	I	System reset
8	AO	I	Control signal distinguishing data from microcomputer
9	$\overline{\text{STB}}$	I	Signal latching serial data inside LSI
10	$\overline{\text{SCK}}$	I	Clock input terminal for serial data input and output
11	SO	O	Serial data and status signal output
12	SI	I	Serial data input
13	TM2	I	Double speed playback control terminal
14	D.GND		Logic circuit GND
15	TEST	I	Test terminal
16	STBY	I	Stand-by input terminal
17	CTLV	I	Control terminal for clock generation VCO used by digital PLL in double speed playback mode
18	POUT	O	Output terminal for phase comparison between EFM signal and bit clock
19	D.GND		Logic circuit GND
20	VCO	I	Inverter input
21	$\overline{\text{VCO}}$	O	Inverter output
22	D.VDD		VDD for logic circuit
23	PLCK	O	Bit clock monitor terminal
24	LOCK	O	"H" when synchronization signal and frame counter output coincide at EFM demodulator
25	WFCK	O	Signal issuing one-frame period by bit clock dividing signal
26	RFCK	O	Oscillation clock divider signal,output pin for signal giving 1-frame sync.
27	C4M	O	Output terminal for signal having four the frequency of LRCK
28	C16M	O	Oscillation clock output terminal
29	D.GND		Logic circuit GND
30	XTAL	I	Oscillation continuation terminal
31	$\overline{\text{XTAL}}$	O	Oscillation continuation terminal
32	D.VDD		VDD for logic circuit
33	SCKO	O	Clock output terminal for audio serial data
34	LRCK	O	Signal distinguishing between left and right channel DOUT terminal output
35	DOUT	O	Serial audio data output terminal
36	TX	O	Digital audio interface data output terminal
37	FLAG	O	Flag signal indicating that the current audio data output of incorrectable data
38	EMPH	O	Emphasis information output
39	WDCK	O	Output terminal for signal having double the frequency of LRCK
40	C2D3	O	Output terminal indicating C2 error correction status
41	SFSY	O	Signal indicating subcode one-frame synchronization
42	SBSY	O	Signal indicating head of subcode block
43	SBSO	O	Subcode data output terminal
44	SBCK	I	Subcode data read clock input terminal
45	D.GND		Logic circuit GND
46,47	C1D1,C1D2	O	Output terminal indicating C1 error correction status
48,49	C2D1,C2D2	O	Output terminal indicating C2 error correction status
50	T4	I	Selects between focus and tracking modulation mode
51	T5	I	Selects motor PWM output mode
52	T6	I	Sets focus PWM output mode
53	T7	I	Sets tracking PWM output mode
54	D.VDD		VDD for logic circuit
55	MRD	O	PWM negative output terminal for the spindle loop filter
56	MFD	O	PWM positive output terminal for the spindle loop filter
57	SRD	O	PWM negative output terminal for the thread loop filter
58	SFD	O	PWM positive output terminal for the thread loop filter

Pin No.	Pin Name	I/O	Function and Operation
59	D.GND		Logic circuit GND
60	TRD	O	PWM negative output terminal for the tracking loop filter
61	TFD	O	PWM positive output terminal for the tracking loop filter
62	FRD	O	PWM negative output terminal for the focus loop filter
63	FFD	O	PWM positive output terminal for the focus loop filter
64	D.VDD		VDD for logic circuit
65	OUTSEL	I	Sets PWM output mode for the motor system
66	TEC1	I	Tracking error input terminal
67	TEC0	I	Tracking error input terminal
68	A.VDD		VDD for analog circuit
69,70	VR2,VR1	I	A/D converter input
71	TE	I	Tracking error input terminal
72	FE	I	Focus error input terminal
73	RFB	I	RFB signal input terminal
74	RFP	I	RFP signal input terminal
75	A.GND		Analog circuit GND
76	REFOUT	O	A/D converter midpoint voltage output terminal inside LSI
77	RFI	I	RF signal input terminal for EFM comparator
78	ASI	I	Level comparing input for RF signal comparison
79	EFM	O	EFM signal output terminal
80	A.VDD		VDD for analog circuit

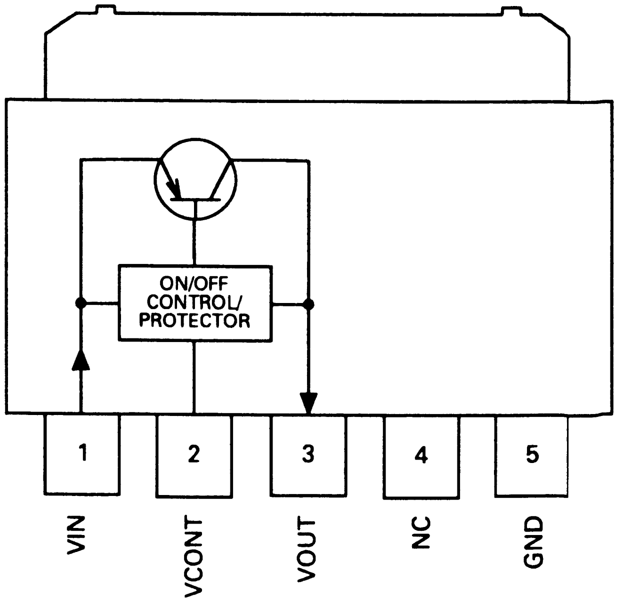
*UPD63700GF1


40
25
41
24
64
1
65
80

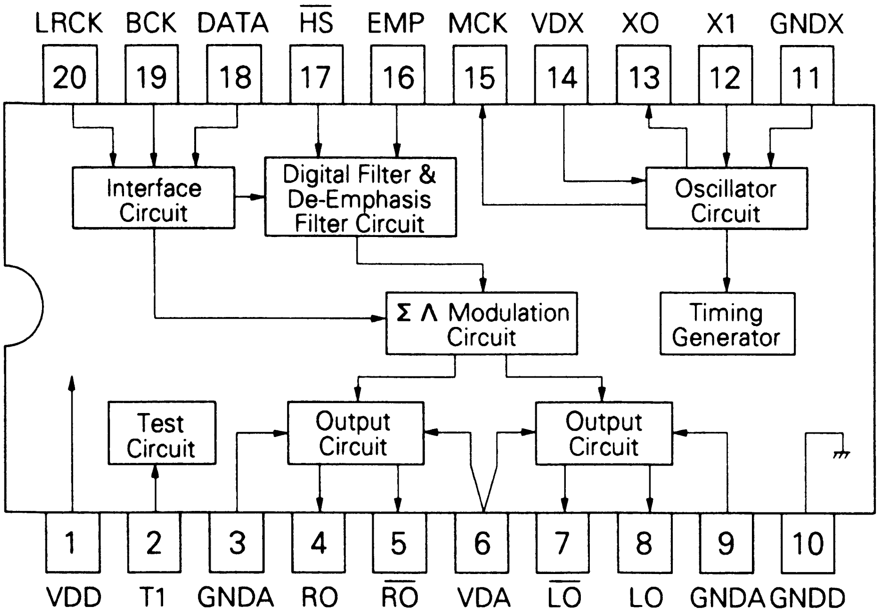
XRA6285FP


VREF
RIN
POWER SAVE
FIN
VCC
VM
24
23
22
21
20
19
FIN
18
17
16
15
14
13
POWER SAVE
CONTROL LOGIC
TSD
1
2
3
4
5
6
FIN
7
8
9
10
11
12
OUT2
RNF
GND
OUT1

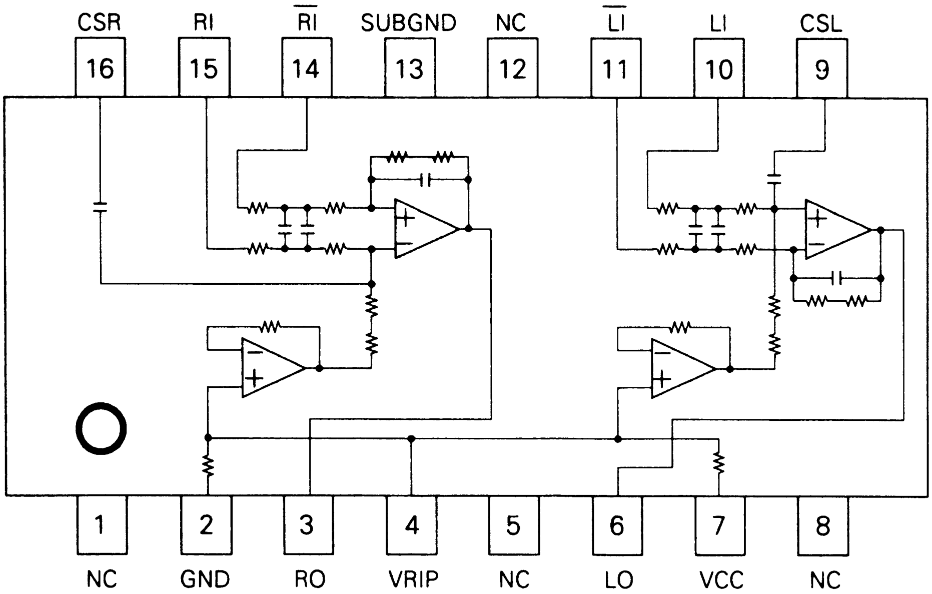
PQ05TZ51


ON/OFF CONTROL/ PROTECTOR
1
2
3
4
5
VIN
VCONT
VOUT
NC
GND

***TC9268F**


LRCK
BCK
DATA
$\overline{HS}$
EMP
MCK
VDX
XO
X1
GNDX
20
19
18
17
16
15
14
13
12
11
Interface Circuit
Digital Filter & De-Emphasis Filter Circuit
Oscillator Circuit
Σ Λ Modulation Circuit
Timing Generator
Test Circuit
Output Circuit
Output Circuit
1
2
3
4
5
6
7
8
9
10
VDD
T1
GNDA
RO
$\overline{RO}$
VDA
$\overline{LO}$
LO
GNDA
GNDD

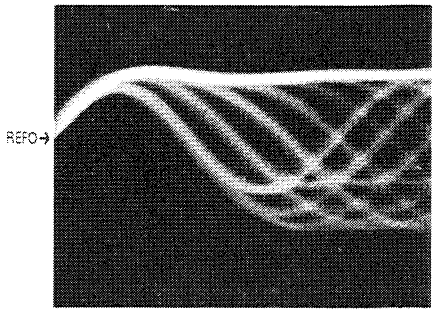
TA2063F


CSR
RI
$\overline{RI}$
SUBGND
NC
$\overline{LI}$
LI
CSL
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
NC
GND
RO
VRIP
NC
LO
VCC
NC

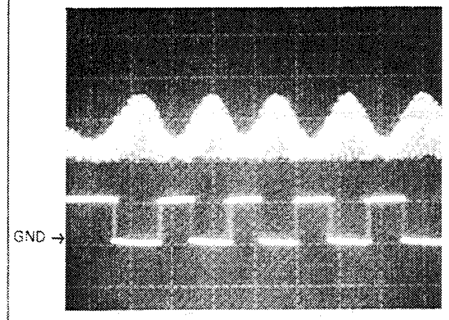
● Waveforms

Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO: 2.5V

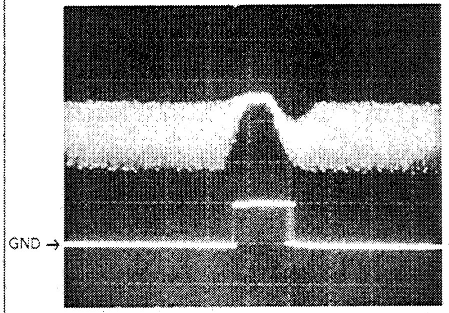
① RFO 0.5V/div. 0.2μs/div.
Normal mode: play



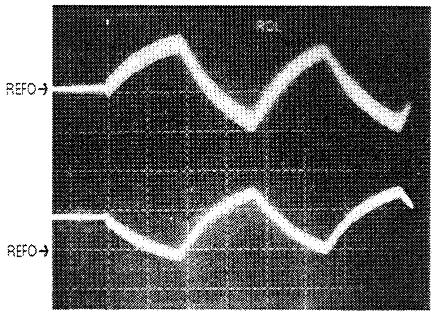
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Test mode: Tracking open



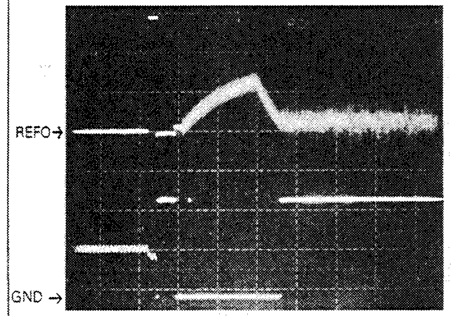
① CH1: RFO 1V/div. 0.5ms/div.
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800μm.



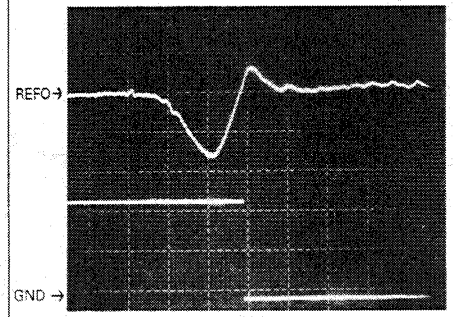
③ CH1: FIN 0.5V/div. 0.2s/div.
④ CH2: FO+ 2V/div.
Test mode: No disc, Focus close



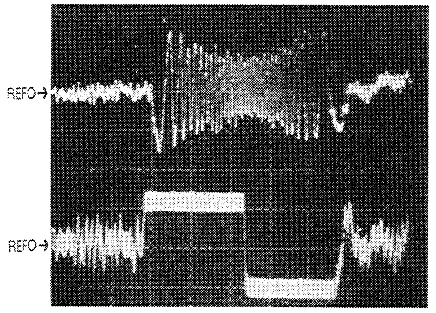
③ CH1: FIN 0.5V/div. 0.2s/div.
⑤ CH2: FOK 2V/div.
Normal mode: Focus close



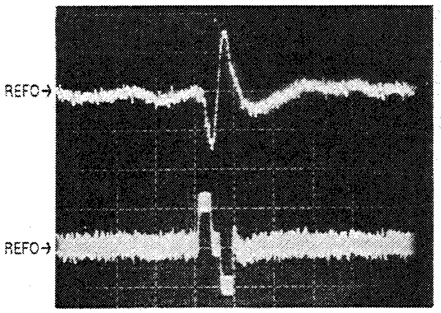
⑥ CH1: FEY 0.5V/div. 1ms/div.
⑦ CH2: XSO 2V/div.
Normal mode: Focus close



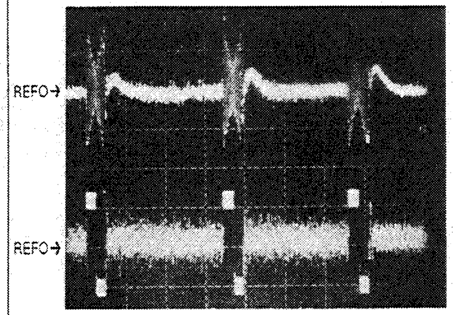
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: 32 track jump (FWD)



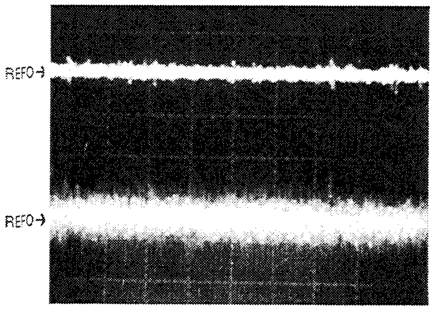
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: Single jump (FWD)



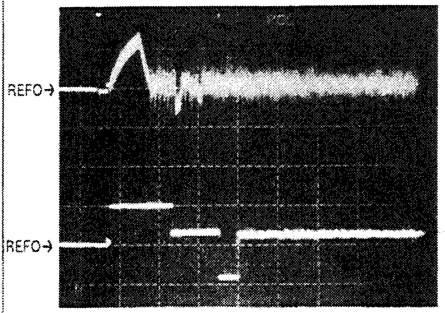
⑧ CH1: TEY 0.5V/div. 5ms/div.
⑨ CH2: TIN 0.5V/div.
Test mode: 100 track jump (FWD)



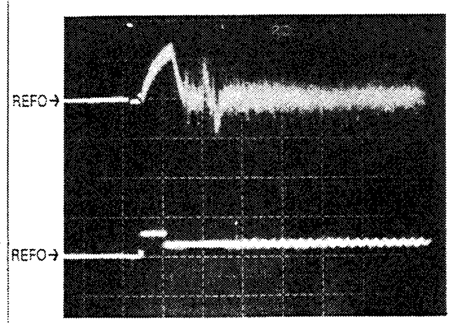
⑥ CH1: FEY 0.2V/div. 20ms/div.
③ CH2: FIN 0.5V/div.
Normal mode: Play



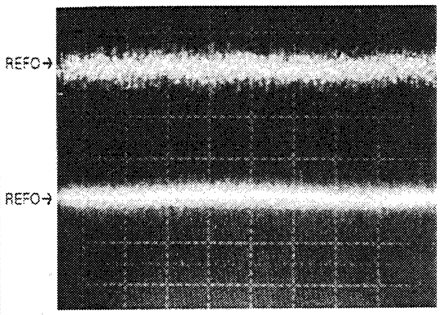
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus close (12cm)



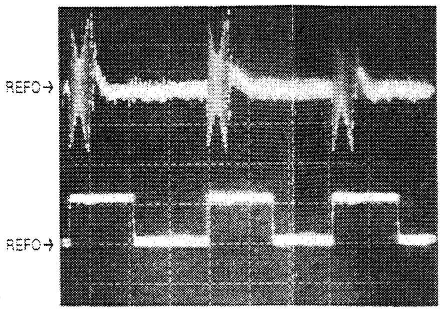
③ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus close (8cm)



⑧ CH1: TEY 0.5V/div. 20ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Play

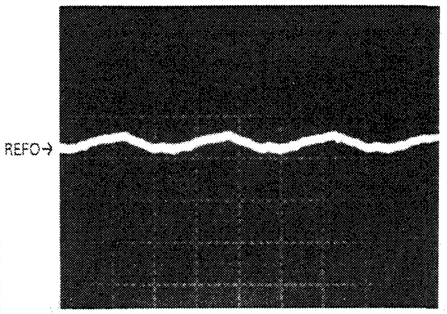


⑧ CH1: TEY 0.5V/div. 5ms/div.
㉓ CH2: CIN 0.5V/div.
Test mode: 100 track jump (FWO)



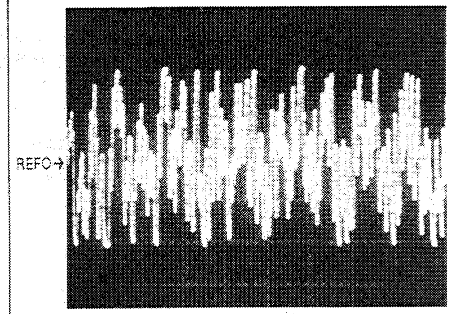
⑩ SIN 0.5V/div. 50ms/div.

Normal mode: 1Play (12cm disc)



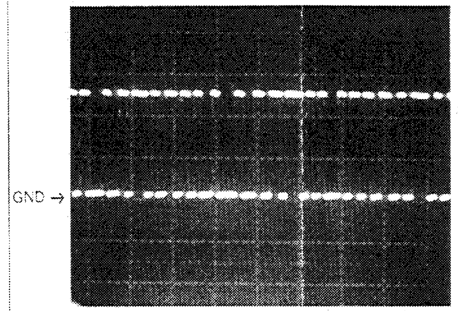
⑩ SIN 0.5V/div. 10ms/div.

Search (12cm disc)

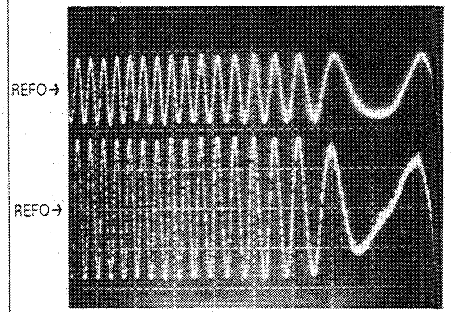


⑪ EFM 2V/div. 5μs/div.

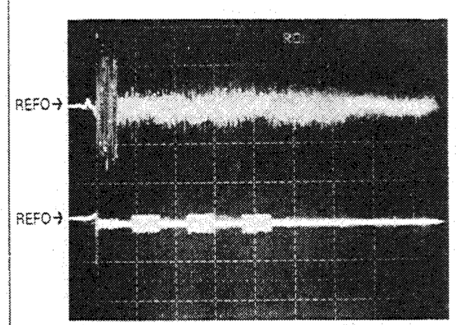
Play



⑧ CH1: TEY 1V/div. 2ms/div.
⑫ CH2: TEC 1V/div.
Test mode: Focus closed
Tracking open

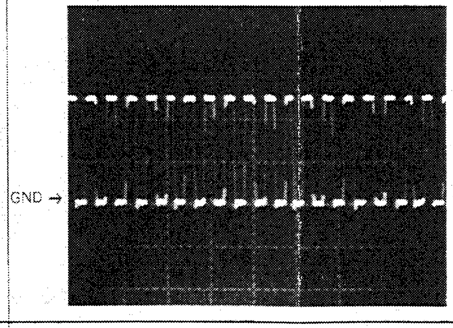


⑧ CH1: TEY 0.5V/div. 0.1s/div.
⑥ CH2: FEY 0.5V/div.
Normal mode: AGC after focus close



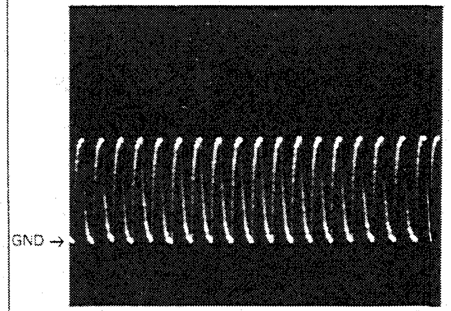
⑮ PLCK 2V/div. 0.5μs/div.

Play



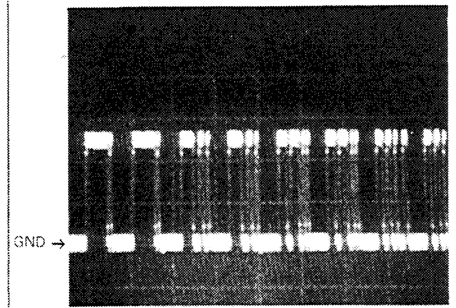
⑯ SCKO 2V/div. 1μs/div.

Play



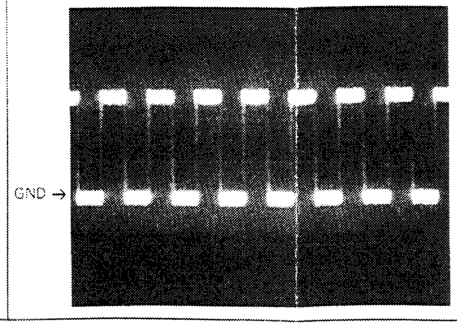
⑰ Dout 2V/div. 10μs/div.

Play



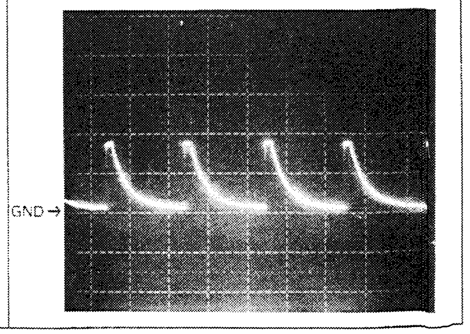
⑱ LRCK 2V/div. 20μs/div.

Play

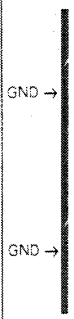


⑲ VD 5V/div. 50ms/div.

Normal mode: No disc

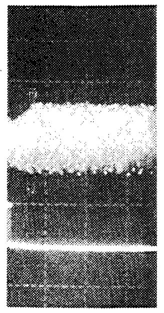


㉒ C
㉑ C
N

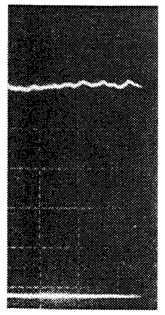


iagram.

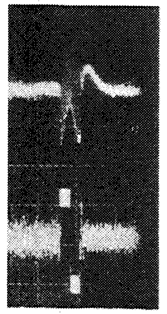
0.5ms/div.
t part passes



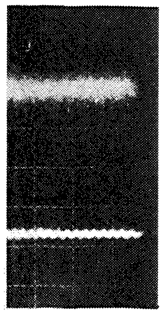
1ms/div.
e



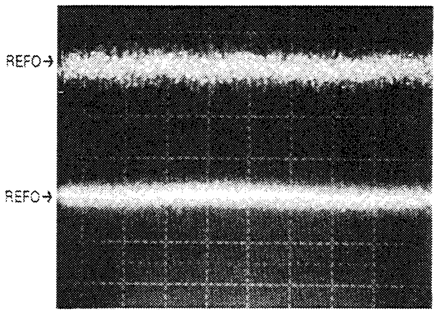
5ms/div.
p (FWD)



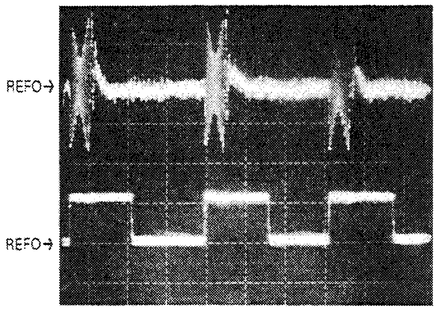
0.5s/div.
e (8cm)



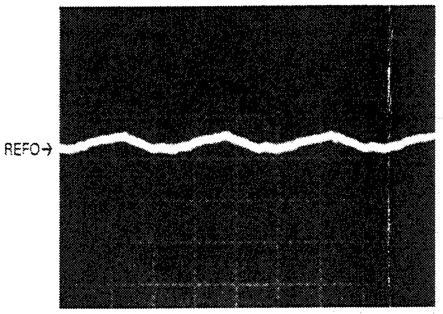
⑧ CH1: TEY 0.5V/div. 20ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Play



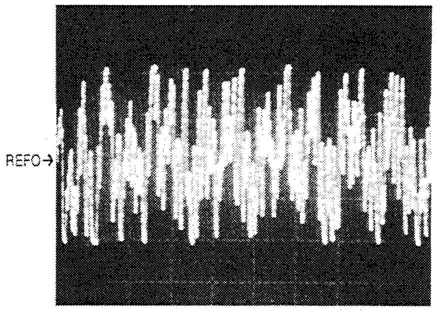
⑧ CH1: TEY 0.5V/div. 5ms/div.
㉓ CH2: CIN 0.5V/div.
Test mode: 100 track jump (FWO)



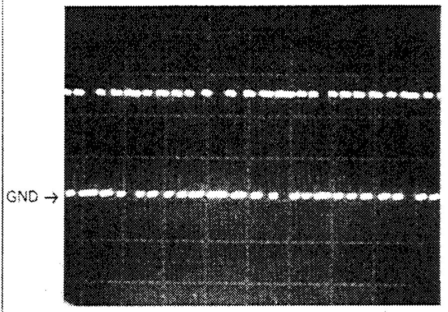
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: 1Play (12cm disc)



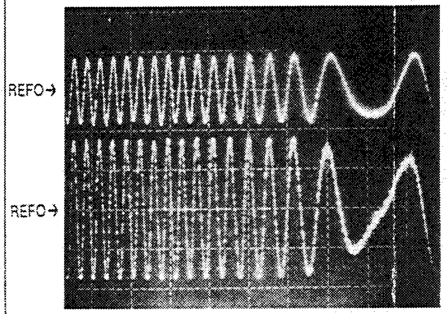
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



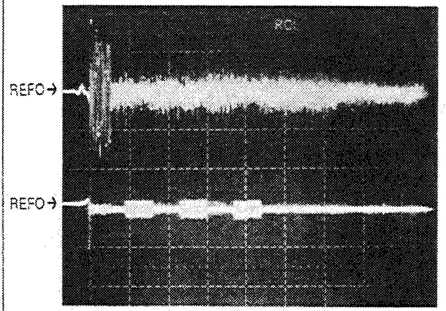
⑪ EFM 2V/div. 5µs/div.
Play



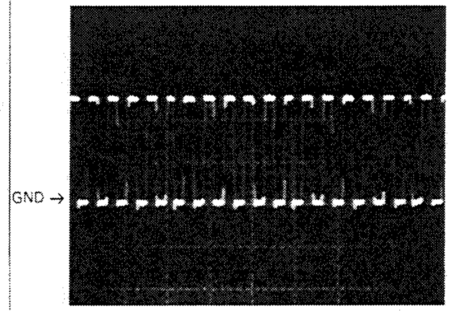
⑧ CH1: TEY 1V/div. 2ms/div.
⑫ CH2: TEC 1V/div.
Test mode: Focus closed
Tracking open



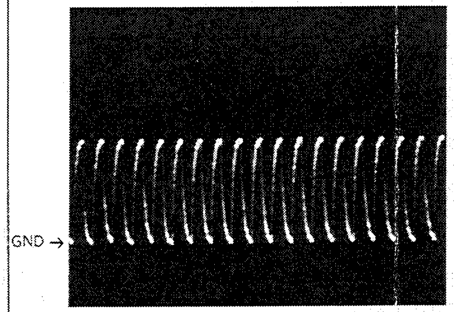
⑧ CH1: TEY 0.5V/div. 0.1s/div.
⑥ CH2: FEY 0.5V/div.
Normal mode: AGC after focus close



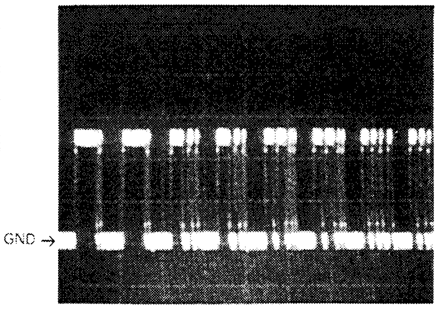
⑮ PLCK 2V/div. 0.5µs/div.
Play



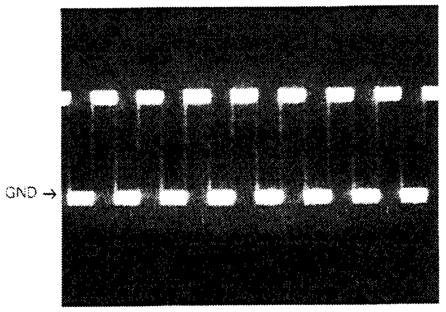
⑯ SCKO 2V/div. 1µs/div.
Play



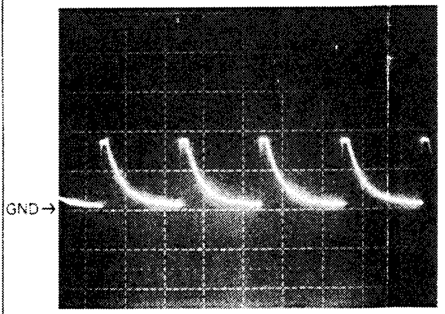
⑰ Dout 2V/div. 10µs/div.
Play



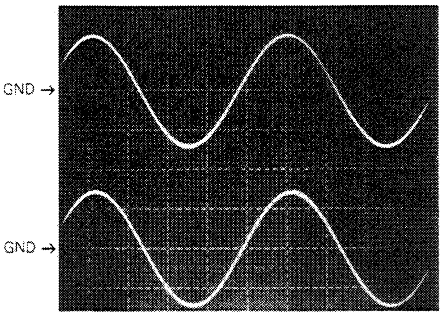
⑱ LRCK 2V/div. 20µs/div.
Play



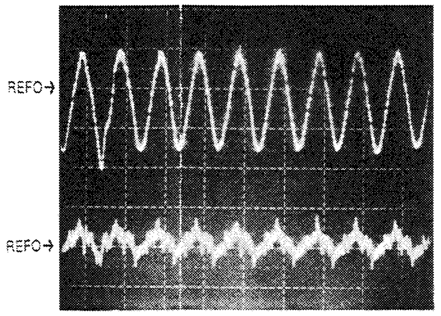
⑲ VD 5V/div. 50ms/div.
Normal mode: No disc



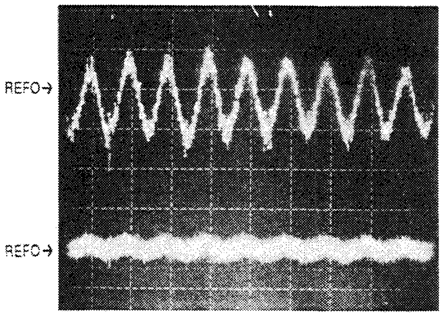
㉒ CH1: R OUT 1V/div. 0.2ms/div.
㉑ CH2: L OUT 1V/div.
Normal mode: Play (1kHz 0dB)



⑥ CH1: FEY 1V/div. 1ms/div.
③ CH2: FIN 1V/div.
Normal mode: During AGC



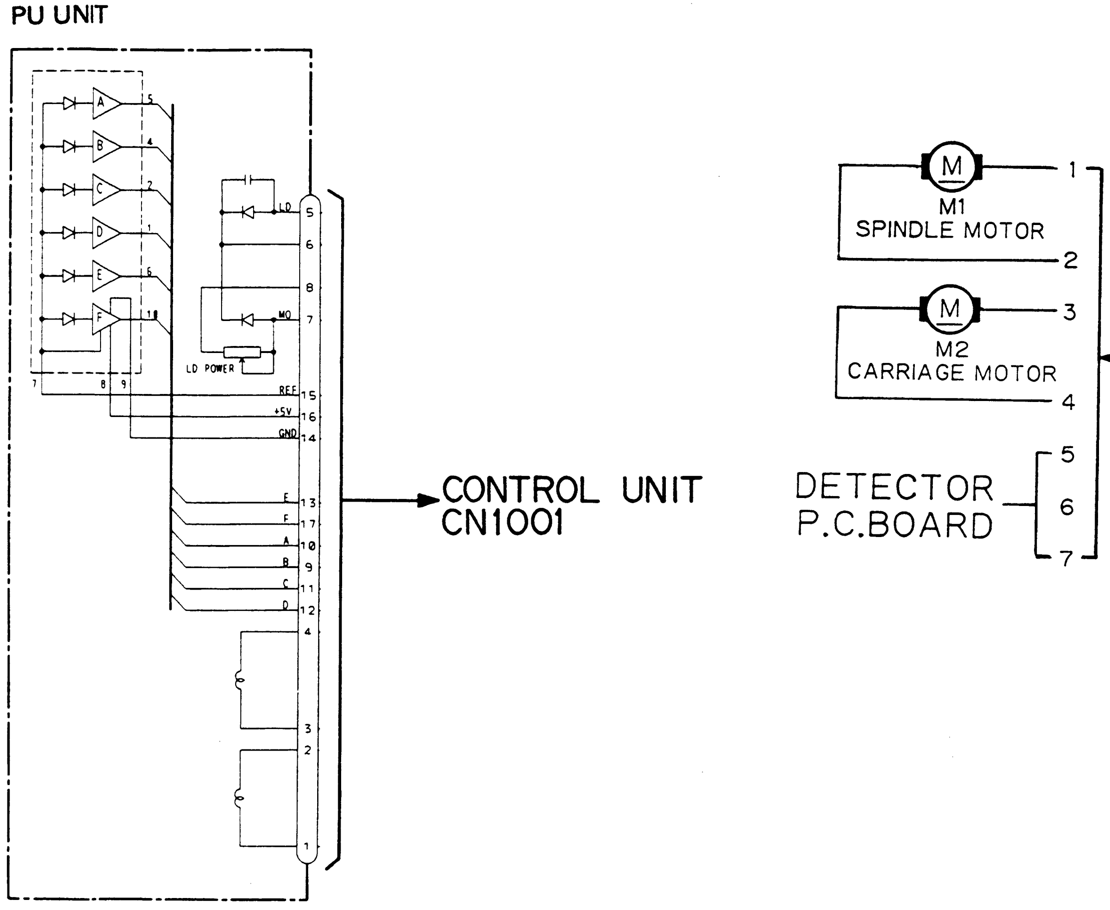
⑧ CH1: TEY 0.2V/div. 1ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: During AGC

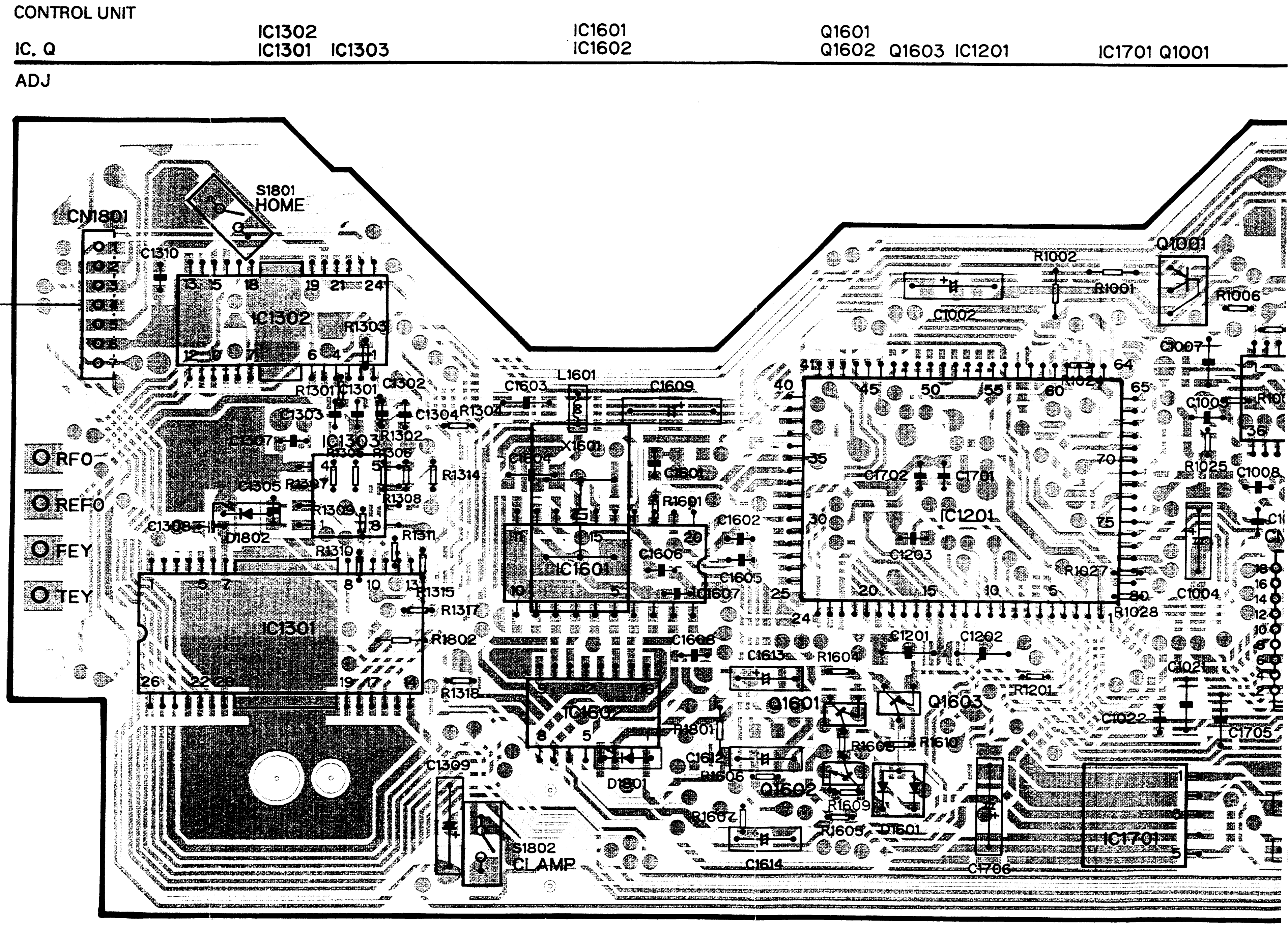


2. CIRCUIT DIAGRAM AND PATTERN

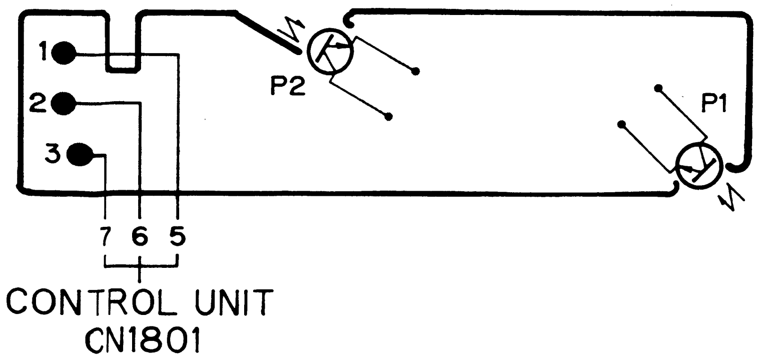
2.1 CD MECHANISM MODULE

- **Connection Diagram**


PU UNIT
A
B
C
D
E
F
LD
MD
LD POWER
REF
+5V
GND
CONTROL UNIT
CN1001
M
M1
SPINDLE MOTOR
M
M2
CARRIAGE MOTOR
1
2
3
4
5
6
7
DETECTOR
P.C.BOARD


CONTROL UNIT
IC, Q
IC1302
IC1301
IC1303
IC1601
IC1602
Q1601
Q1602
Q1603
IC1201
IC1701
Q1001
ADJ
CN1801
S1801
HOME
C1310
IC1302
R1303
R1301
C1301
C1302
C1303
C1304
R1304
C1307
IC1303
R1305
R1306
R1314
C1305
R1307
R1308
R1309
D1802
C1308
R1310
R1311
R1315
R1317
R1802
R1318
IC1301
C1309
S1802
CLAMP
RFO
REFO
FEY
TEY
C1603
L1601
C1609
C1604
X1601
C1601
R1601
C1602
IC1601
C1606
C1605
C1607
C1608
C1613
R1604
IC1602
R1801
D1801
C1612
R1606
Q1602
R1607
C1614
Q1601
R1608
R1610
R1609
R1605
D1601
Q1603
C1201
C1202
R1201
C1702
C1701
IC1201
C1203
R1027
R1028
C1004
C1021
C1022
C1705
C1706
IC1701
C1002
R1002
R1001
Q1001
R1006
C1007
C1009
R1025
C1008

DETECTOR P.C.BOARD


1
2
3
P2
P1
7
6
5
CONTROL UNIT
CN1801

TROL UNIT

IC1302
IC1301 IC1303

IC1601
IC1602

Q1601
Q1602 Q1603 IC1201

IC1701 Q1001

IC1001

VR1003 VR1002
VR1001 VR1004

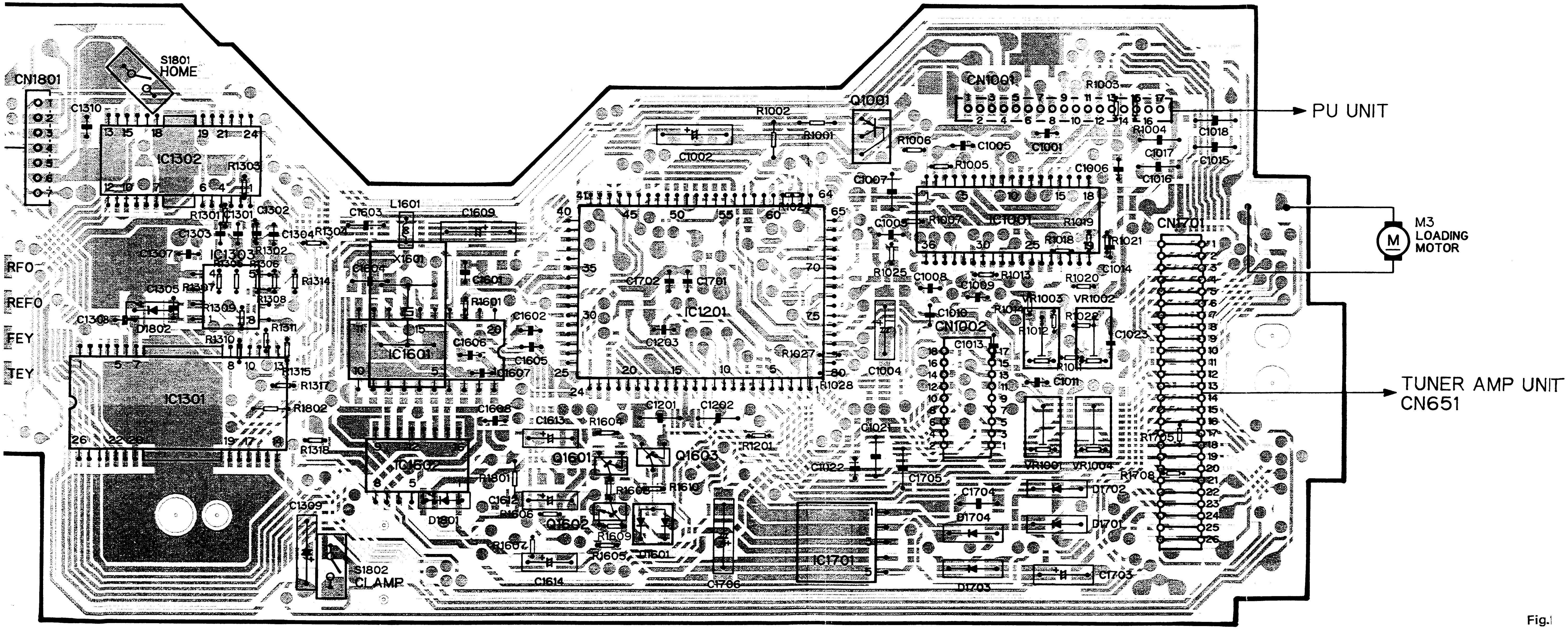
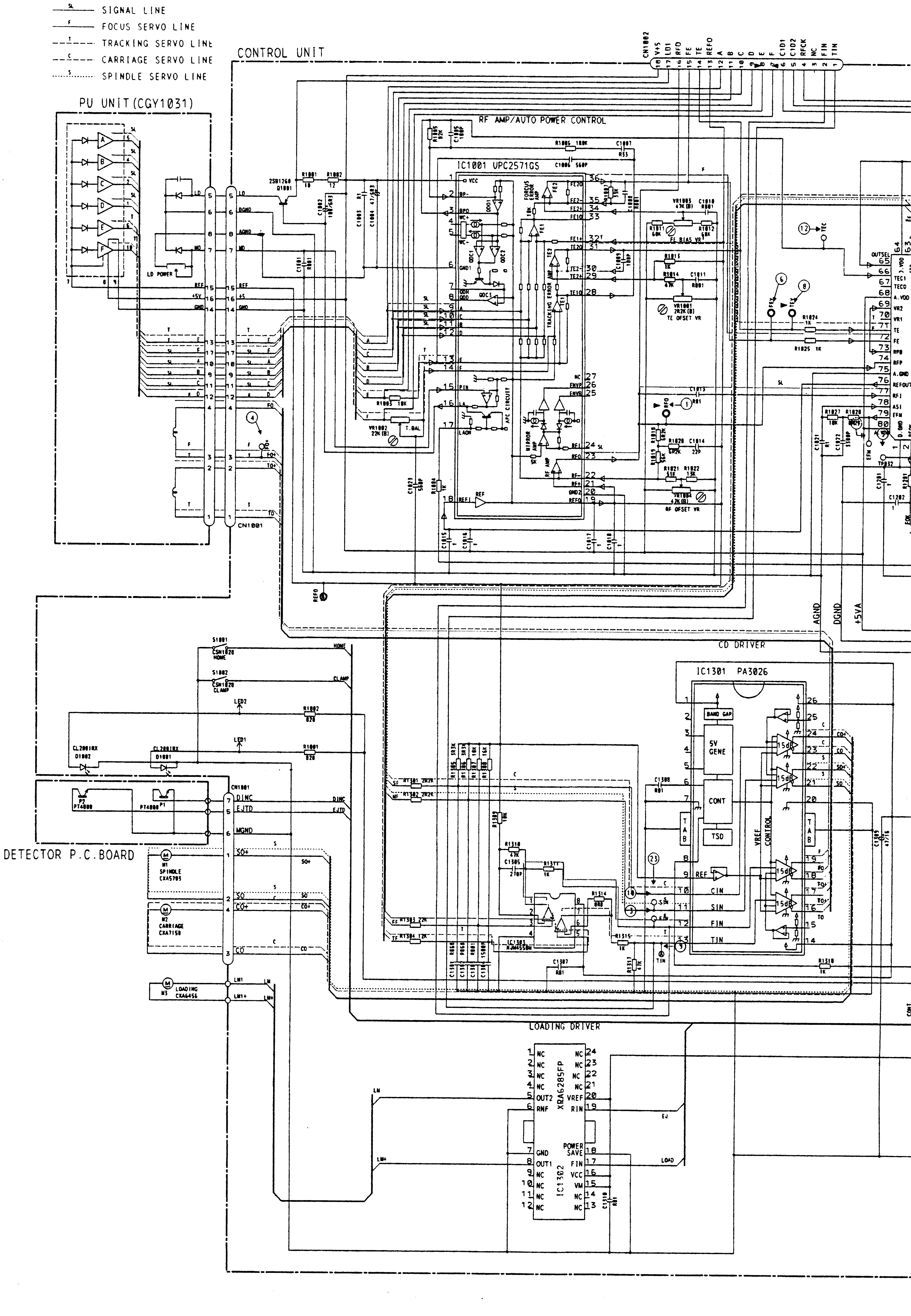

CN1801
S1801
HOME
C1310
IC1302
R1303
C1302
R1301
C1301
C1303
C1304
C1307
IC1303
R1302
R1306
R1314
C1305
R1307
R1308
R1309
R1311
R1310
C1308
D1802
RFO
REFO
FEY
TEY
IC1301
R1315
R1317
R1802
R1318
C1309
S1802
CLAMP
C1603
L1601
C1609
X1601
C1604
C1601
R1601
C1602
C1606
C1605
C1607
IC1601
C1608
C1613
R1604
IC1602
R1801
D1801
C1612
R1606
R1607
C1614
Q1601
Q1602
R1608
R1609
R1605
R1610
D1601
Q1603
C1702
C1701
IC1201
C1203
C1201
C1202
R1201
R1027
R1028
C1002
R1002
R1001
Q1001
R1006
C1005
R1005
C1007
C1003
R1025
C1008
C1009
C1010
C1004
C1021
C1022
C1706
C1705
IC1701
C1704
D1704
D1703
CN1001
R1003
R1004
C1001
C1006
C1018
C1017
C1015
C1016
IC1001
R1007
R1019
R1018
R1021
C1014
R1013
R1020
R1014
VR1003
VR1002
R1012
R1022
C1023
CN1002
C1013
C1011
VR1001
VR1004
D1702
D1701
C1703
CN1701
R1705
R1708
PU UNIT
M
M3
LOADING
MOTOR
TUNER AMP UNIT
CN651

Fig.I

Circuit Diagram

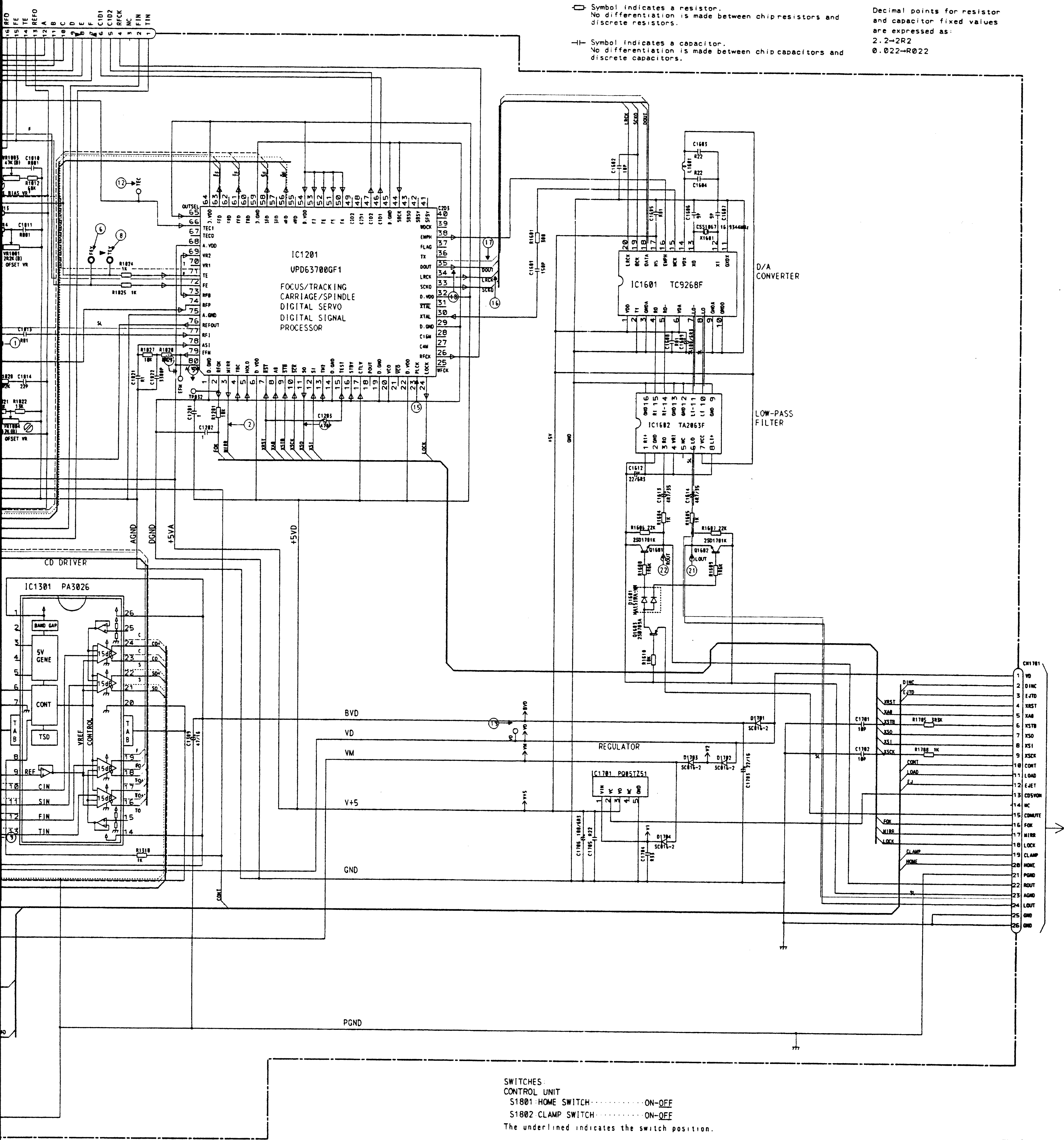

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
CONTROL UNIT
PU UNIT (CGY1031)
RF AMP/AUTO POWER CONTROL
IC1001 UPC2571GS
CN1002
CN1001
VR1002 22K(B)
T.BAL
FE BIAS VR
TE OFSET VR
RF OFSET VR
APC CIRCUIT
TRACKING ERROR AMP
FOCUS ERROR AMP
MIRROR AMP
RF AMP
LD POWER
2SB1260 Q1001
REFO
AGND
DGND
+5VA
CD DRIVER
IC1301 PA3026
BAND GAP
5V GENE
CONT
TSD
VREF CONTROL
T A B
REF
CIN
SIN
FIN
TIN
IC1303 NJM4558M
S1001 CSN1028 HOME
S1002 CSN1028 CLAMP
LED2
LED1
CL200IRX D1002
CL200IRX D1001
PT4800 P2
PT4800 P1
DETECTOR P.C.BOARD
DINC
EJTD
MGND
M1 SPINDLE CXA5785
M2 CARRIAGE CXA7158
M3 LOADING CXA6456
SO+
SO-
CO+
CO-
LM1
LM1+
LOADING DRIVER
IC1302 XRA6285FP
NC
OUT2
RNF
GND
OUT1
VREF
RIN
POWER SAVE
FIN
VCC
VM
EJ
LOAD
1
2
3
4

NOTE:

⊏⊐ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


IC1201
UPD63700GF1
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
IC1601 TC9268F
D/A
CONVERTER
IC1602 TA2063F
LOW-PASS
FILTER
CD DRIVER
IC1301 PA3026
BAND GAP
5V GENE
CONT
TSD
VREF CONTROL
REGULATOR
IC1701 PQ05TZ51
BVD
VD
VM
V+5
GND
PGND
AGND
DGND
+5VA
+5VD
CN1701
VD
DINC
EJTD
XRST
XAB
XSTB
XSO
XSI
XSCK
CONT
LOAD
EJET
CDSVON
NC
CDMUTE
FOK
MIRR
LOCK
CLAMP
HOME
PGND
ROUT
AGND
LOUT
GND
GND
Q1601
Q1602
2SD1781K
D1701
D1702
D1703
D1704
4
5
6
7

SWITCHES:
CONTROL UNIT
S1801:HOME SWITCH··········ON-OFF
S1802:CLAMP SWITCH··········ON-OFF
The underlined indicates the switch position.

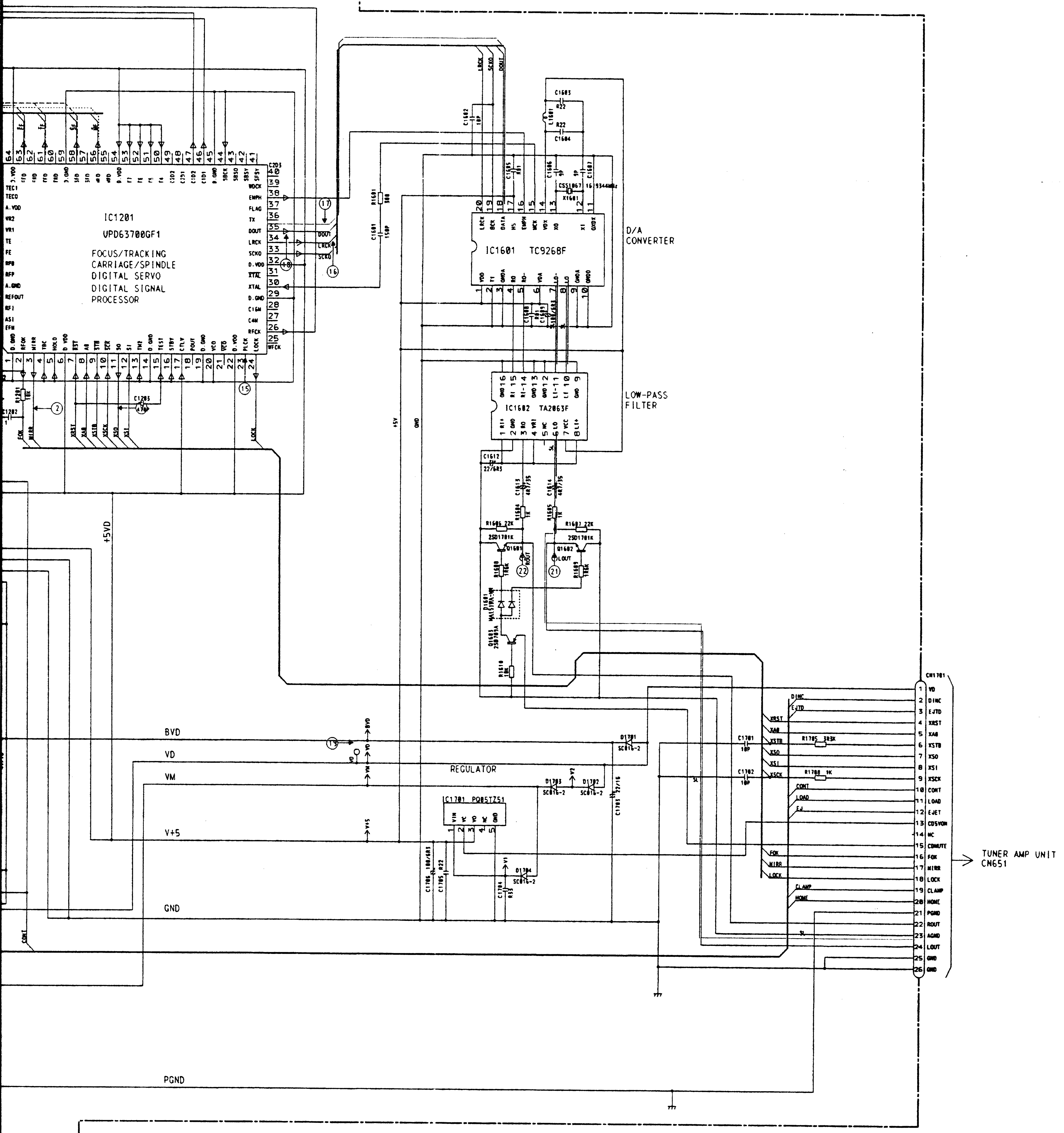
Fig.2

NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

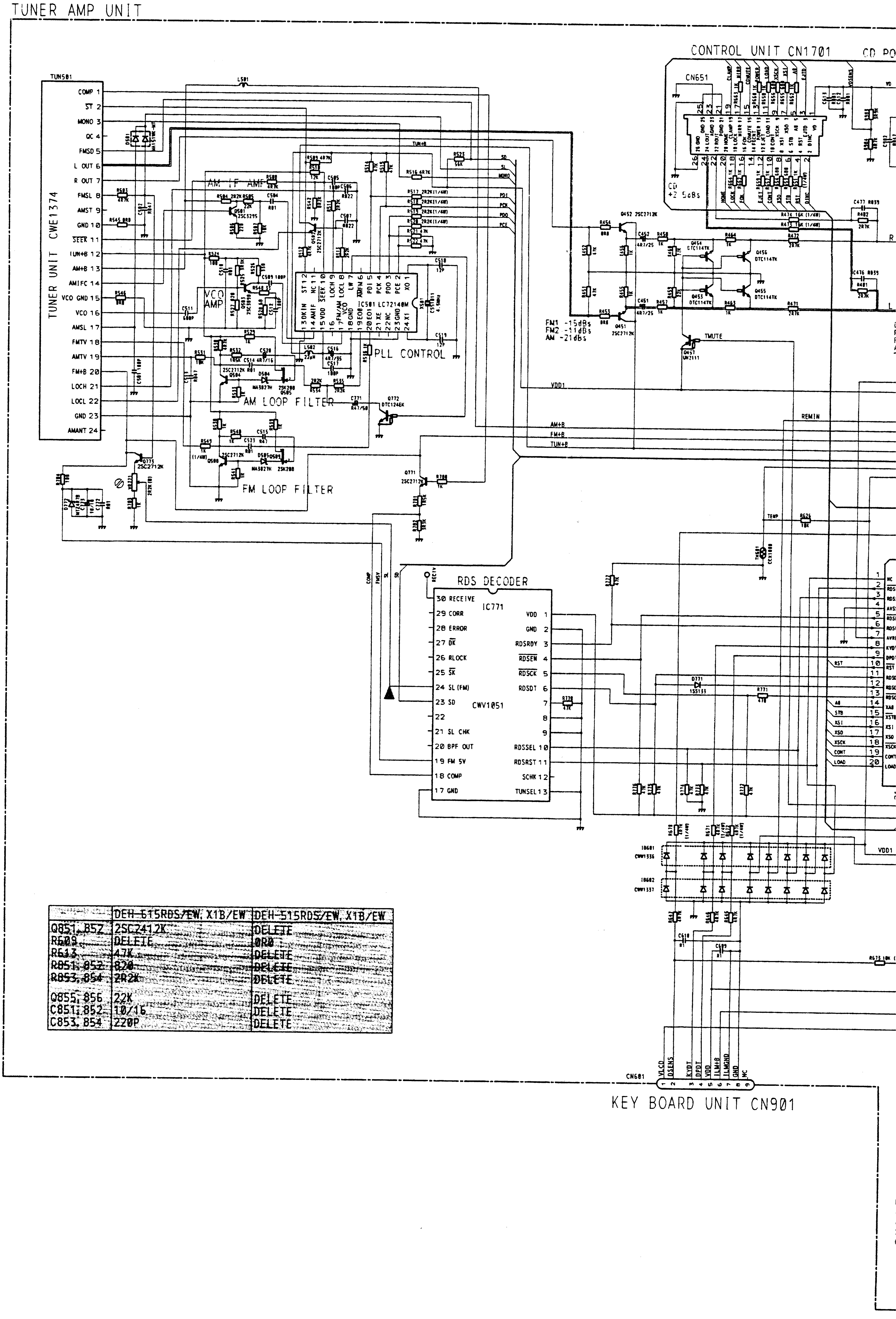

IC1201
UPD63700GF1
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
IC1601 TC9268F
D/A
CONVERTER
IC1602 TA2063F
LOW-PASS
FILTER
IC1701 PQ05TZ51
REGULATOR
BVD
VD
VM
V+5
GND
PGND
+5VD
CN1701
TUNER AMP UNIT
CN651
VD
DINC
EJTD
XRST
XAO
XSTB
XSO
XSI
XSCK
CONT
LOAD
EJET
CDSVON
NC
CDMUTE
FOK
MIRR
LOCK
CLAMP
HOME
PGND
ROUT
AGND
LOUT
GND
GND
R1705 3R3K
R1708 1K
C1701 10P
C1702 10P
D1701 SC016-2
D1702 SC016-2
D1703 SC016-2
D1704 SC016-2
2SD1781K
Q1601
Q1602
Q1603 2SB709A
D1601 MA151WA-W
ROUT
LOUT
CSS1067 16.9344MHz
X1601
C1603
C1604
L1601
R1601 560
C1601 150P
C1602 10P
R1606 22K
R1607 22K
C1612 22/6R3
C1613 4R7/35
C1614 4R7/35
R1201
C1202
C1203
(2)
(15)
(16)
(17)
(18)
(19)
(21)
(22)

SWITCHES:
CONTROL UNIT
S1801: HOME SWITCH ············ ON-OFF
S1802: CLAMP SWITCH ··········· ON-OFF
The underlined indicates the switch position.

Fig.2

2.2 TUNER AMP UNIT

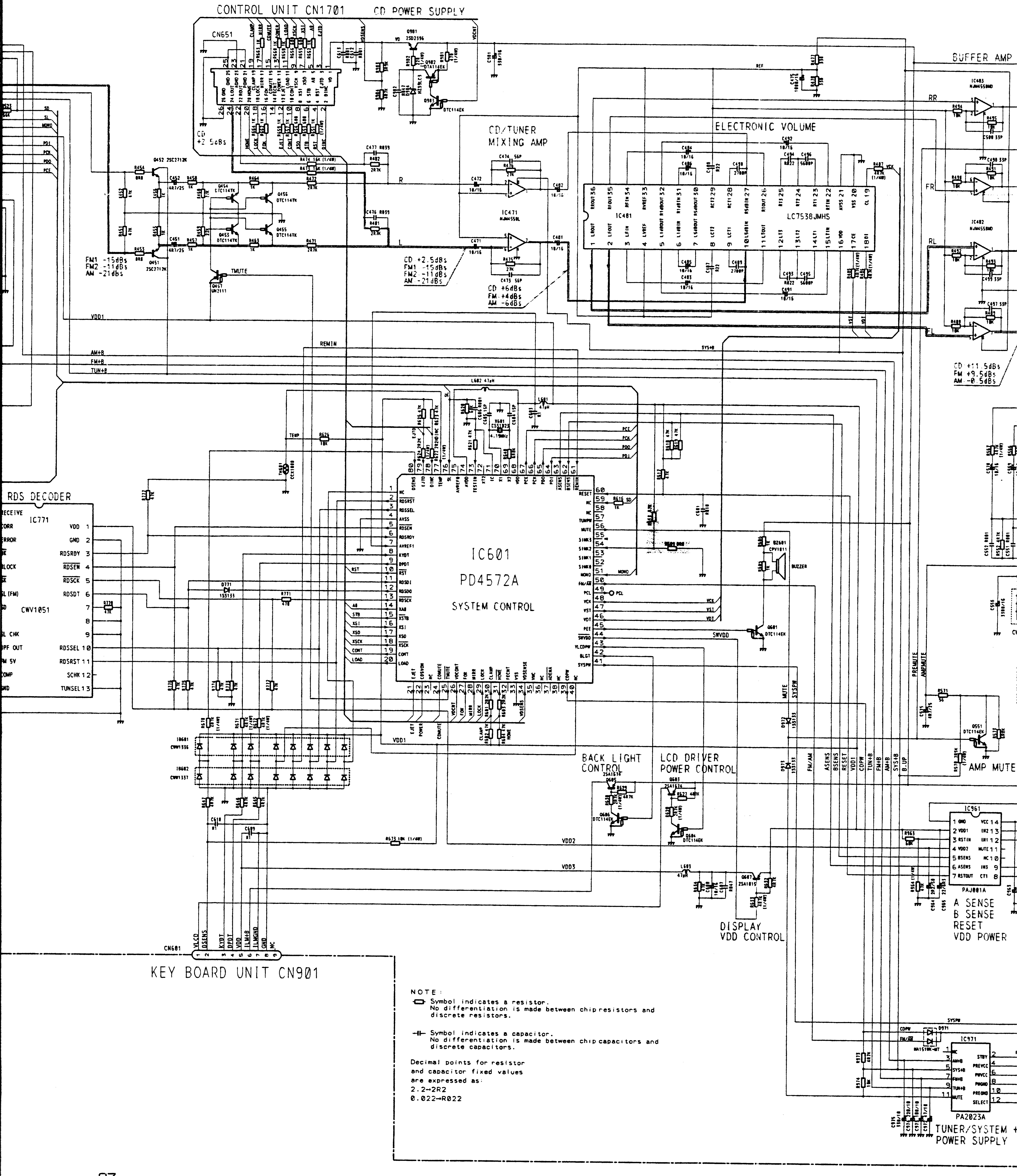
● Circuit Diagram


TUNER AMP UNIT
TUN501
TUNER UNIT CWE1374
COMP 1
ST 2
MONO 3
QC 4
FMSD 5
L OUT 6
R OUT 7
FMSL 8
AMST 9
GND 10
SEEK 11
TUN+B 12
AM+B 13
AMIFC 14
VCO GND 15
VCO 16
AMSL 17
FMTV 18
AMTV 19
FM+B 20
LOCH 21
LOCL 22
GND 23
AMANT 24
AM IF AMP
VCO AMP
AM LOOP FILTER
FM LOOP FILTER
PLL CONTROL
IC501 LC72140M
13 OKIN
14 AMIF
15 VDD
16 FM/AM
17 VCO
18 GND
19 EO1
20 EO2
21 XE
22 NC
23 GND
24 X1
ST 12
NC 11
SEEK 10
LOCH 9
LOCL 8
LW 7
AMFM 6
PDI 5
PCK 4
PDO 3
PCE 2
XO 1
L501
Q501 2SC5295
Q503 2SC3098
Q502 2SC2712K
Q504 2SC2712K
Q505 2SK208
Q506 2SC2712K
Q507 2SK208
D504 MA3827H
D505 MA3827H
Q771 2SC2712K
Q772 DTC124EK
Q775 2SC2712K
X501 4.5MHz
TUN+B
SD
SL
MONO
PDI
PCK
PDO
PCE
VDD1
AM+B
FM+B
TUN+B
REMIN
TEMP
CONTROL UNIT CN1701
CD PO
CN651
CD
+2.5dBs
Q452 2SC2712K
Q451 2SC2712K
Q454 DTC114TK
Q455 DTC114TK
Q456 DTC114TK
Q457 UN2111
TMUTE
FM1 -15dBs
FM2 -11dBs
AM -21dBs
RDS DECODER
IC771
CWV1051
30 RECEIVE
29 CORR
28 ERROR
27 DK
26 RLOCK
25 SK
24 SL (FM)
23 SD
22
21 SL CHK
20 BPF OUT
19 FM 5V
18 COMP
17 GND
VDD 1
GND 2
RDSRDY 3
RDSEN 4
RDSCK 5
RDSDT 6
7
8
9
RDSSEL 10
RDSRST 11
SCHK 12
TUNSEL 13
D771 1SS133
R771 47Ω
IB681 CWV1336
IB682 CWV1337
VDD1
CN681
VLCD
DSENS
KYDT
DPDT
VDD
ILM+B
ILMGND
NC
KEY BOARD UNIT CN901

	DEH-615RDS/EW, X1B/EW	DEH-515RDS/EW, X1B/EW
Q851, 852	2SC2412K	DELETE
R609	DELETE	0R0
R613	47K	DELETE
R851, 852	820	DELETE
R853, 854	2R2K	DELETE
Q855, 856	22K	DELETE
C851, 852	10/16	DELETE
C853, 854	220P	DELETE

A
B
C
D
E
F

1
2
3
4

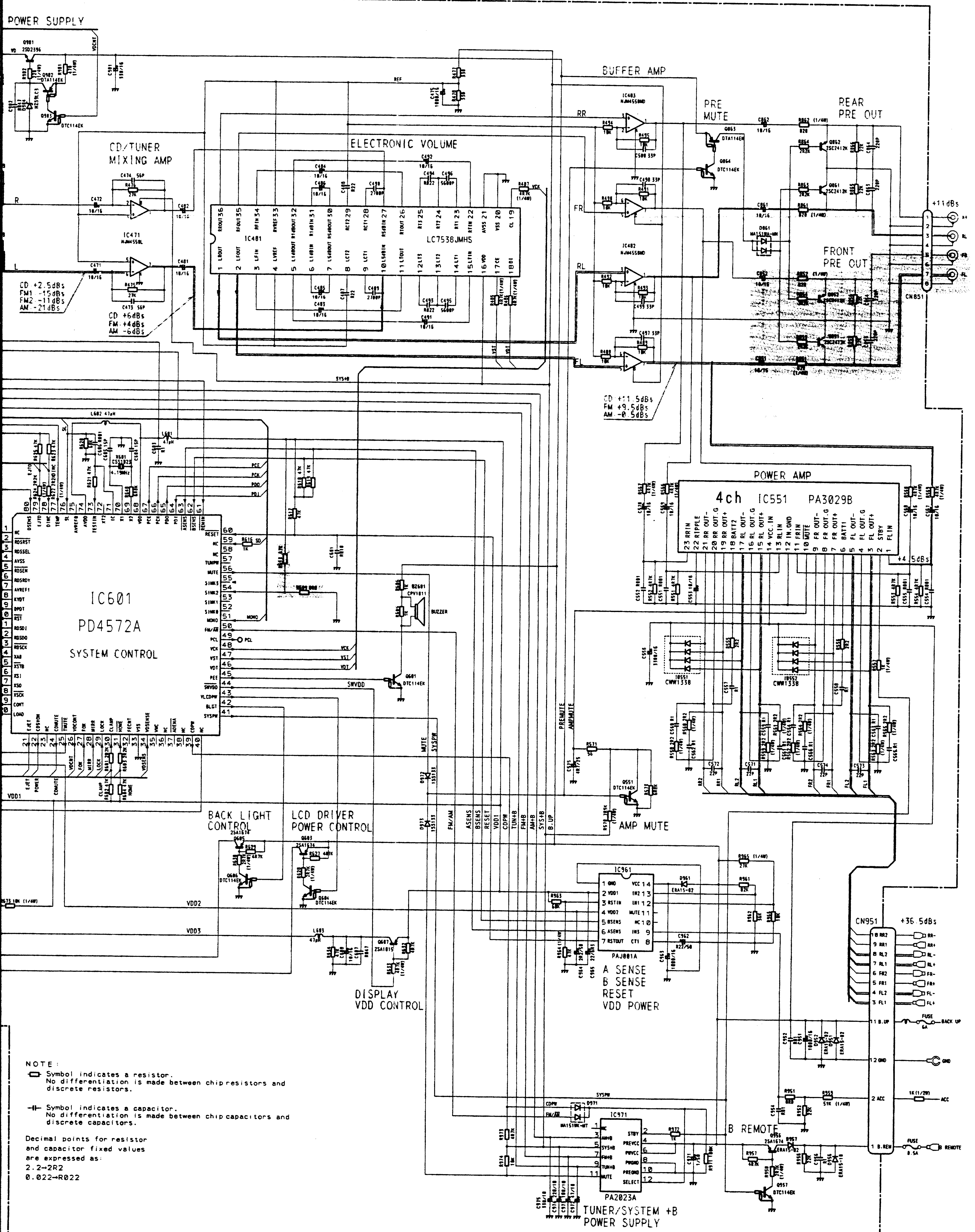

CONTROL UNIT CN1701
CD POWER SUPPLY
CN651
CD +2.5dBs
CD/TUNER MIXING AMP
IC471 NJM4558L
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +6dBs
FM +4dBs
AM -6dBs
ELECTRONIC VOLUME
IC481
LC7538JMHS
BUFFER AMP
IC483 NJM4558MD
IC482 NJM4558MD
RR
FR
RL
FL
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
TMUTE
VDD1
AM+B
FM+B
TUN+B
REMIN
SYS+B
RDS DECODER
IC771
CWV1051
RECEIVE
CORR
ERROR
LOCK
VDD 1
GND 2
RDSRDY 3
RDSEN 4
RDSCK 5
RDSDT 6
7
8
9
RDSSEL 10
RDSRST 11
SCHK 12
TUNSEL 13
IC601
PD4572A
SYSTEM CONTROL
X601 4.19MHz
L682 47μH
BUZZER
BZ601
MONO
PCL
VCK
VST
VDT
SWVDD
MUTE
SYSPW
PREMUTE
AMPMUTE
FM/AM
ASENS
BSENS
RESET
VDD1
COPW
TUN+B
FM+B
AM+B
SYS+B
B.UP
BACK LIGHT CONTROL
LCD DRIVER POWER CONTROL
DISPLAY VDD CONTROL
VDD2
VDD3
AMP MUTE
IC961
PAJ001A
A SENSE
B SENSE
RESET
VDD POWER
IC971
PA2023A
TUNER/SYSTEM + POWER SUPPLY
CN681
VLCD
DSENS
KYDT
DPDT
VDD
ILM+B
ILMGND
NC
KEY BOARD UNIT CN901

NOTE:

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


POWER SUPPLY
Q981 2SD2396
Q982 DTA114EK
Q983 DTC114EK
CD/TUNER MIXING AMP
IC471 NJM4558L
CD +2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +6dBs
FM +4dBs
AM -6dBs
ELECTRONIC VOLUME
IC481
LC7538JMHS
BUFFER AMP
IC483 NJM4558MD
IC482 NJM4558MD
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
PRE MUTE
Q863 DTA114EK
Q864 DTC114EK
REAR PRE OUT
FRONT PRE OUT
+11dBs
CN851
POWER AMP
4ch IC551 PA3029B
+4.5dBs
IC601
PD4572A
SYSTEM CONTROL
BUZZER
Q601 DTC114EK
AMP MUTE
Q551 DTC114EK
BACK LIGHT CONTROL
LCD DRIVER POWER CONTROL
DISPLAY VDD CONTROL
Q687 2SA1815
IC961
PAJ801A
A SENSE
B SENSE
RESET
VDD POWER
CN951
+36.5dBs
BACK UP
GND
ACC
B REMOTE
REMOTE
IC971
PA2023A
TUNER/SYSTEM +B POWER SUPPLY

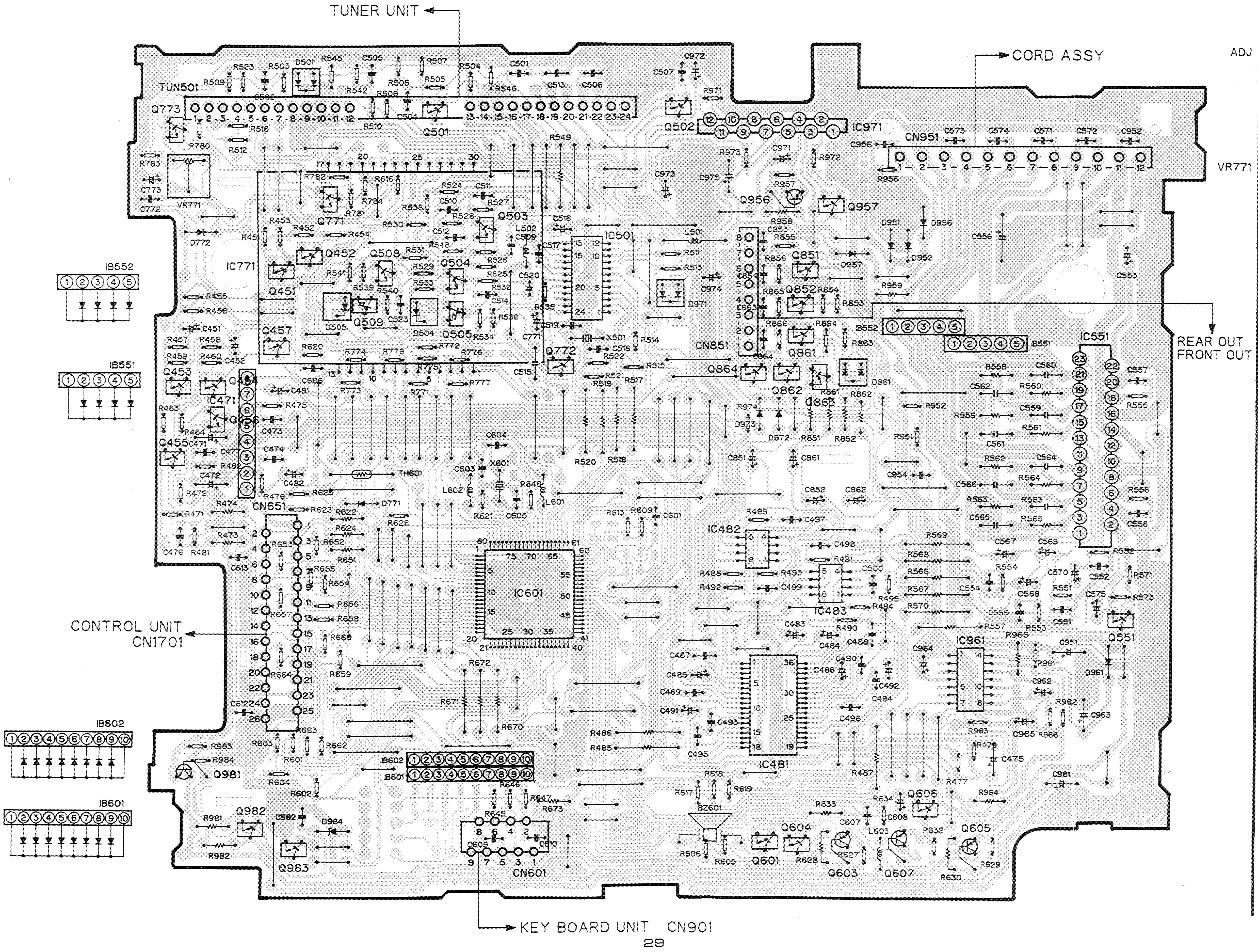
NOTE:

- ⊏⊐ Symbol indicates a resistor.
  No differentiation is made between chip resistors and discrete resistors.
- ⊣⊢ Symbol indicates a capacitor.
  No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022

Fig.3

Connection Diagram

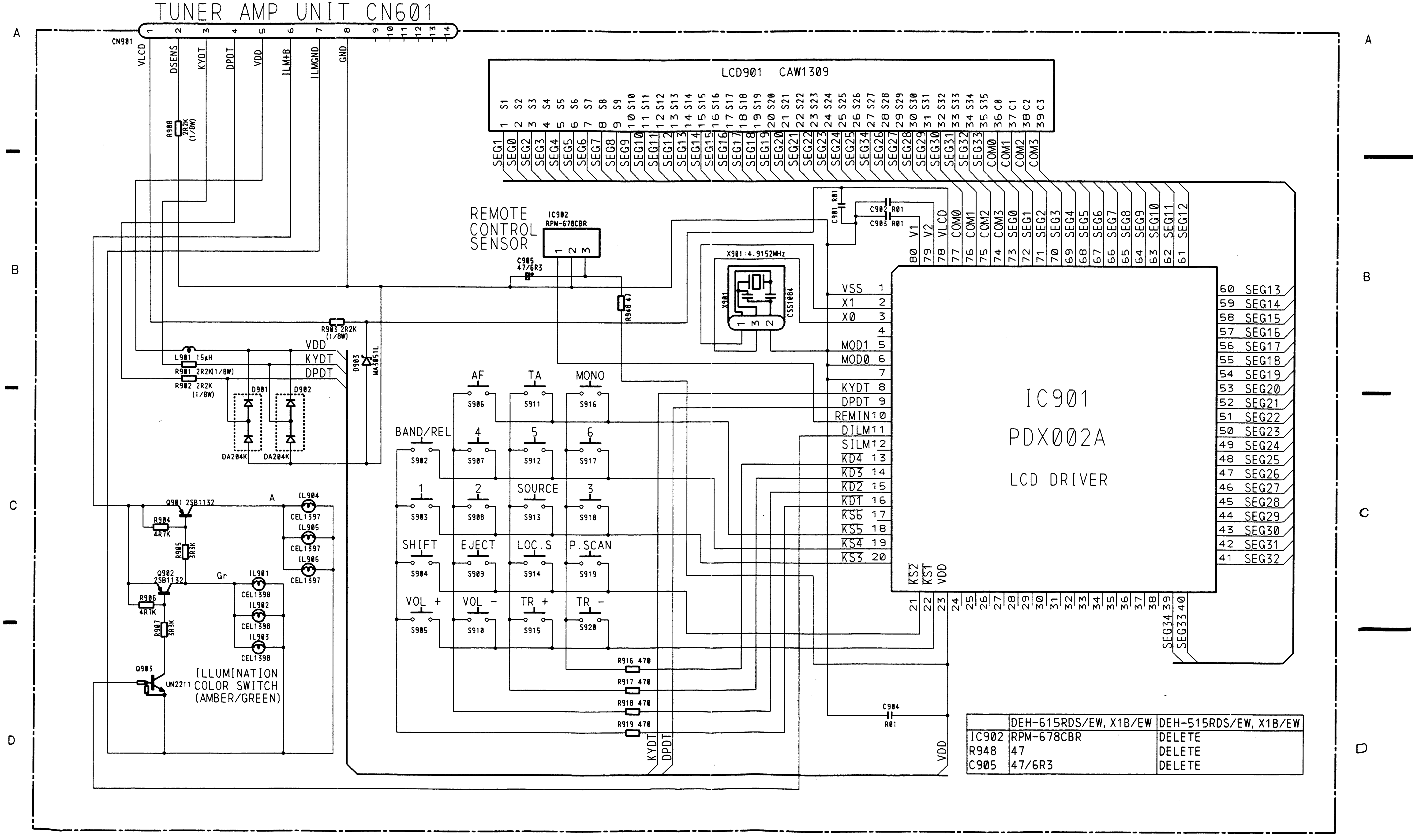

TUNER UNIT
CORD ASSY
TUN501
IC971
CN951
IC771
IC501
CN851
IB552
IB551
IC551
REAR OUT
FRONT OUT
IC471
CN651
CONTROL UNIT
CN1701
IC601
IC482
IC483
IC481
IC961
IB602
IB601
CN601
BZ601
KEY BOARD UNIT CN901

ADJ	IC, Q
	Q501 Q502
	Q773 IC971
VR771	
	Q771 Q956 Q957
	Q503
	Q452 IC501
	IC771 Q451 Q508
	Q504 Q851
	Q509 Q505 Q852
	Q861
	Q457 Q772
	Q864 Q862 Q863
	Q453 Q454
	Q456
	Q455 IC551
	IC471
	IC482
	IC601 IC483
	Q551
	IC961
	IC481
	Q981
	Q606
	Q982
	Q983 Q601 Q604
	Q603 Q607 Q605

Fig.4

2.3 KEY BOARD UNIT

● Circuit Diagram


TUNER AMP UNIT CN601
CN901
VLCD
DSENS
KYDT
DPDT
VDD
ILM+B
ILMGND
GND
R908 2R2K (1/8W)
LCD901 CAW1309
REMOTE CONTROL SENSOR
IC902 RPM-678CBR
C905 47/6R3
R948 47
C901 R01
C902 R01
C903 R01
X901:4.9152MHz
CSS1004
R903 2R2K (1/8W)
L901 15µH
R901 2R2K(1/8W)
R902 2R2K (1/8W)
D903 MA3051L
D901
D902
DA204K
DA204K
AF
TA
MONO
S906
S911
S916
BAND/REL
4
5
6
S902
S907
S912
S917
1
2
SOURCE
3
S903
S908
S913
S918
SHIFT
EJECT
LOC.S
P.SCAN
S904
S909
S914
S919
VOL +
VOL -
TR +
TR -
S905
S910
S915
S920
R916 470
R917 470
R918 470
R919 470
C904 R01
Q901 2SB1132
R904 4R7K
R905 3R3K
Q902 2SB1132
R906 4R7K
R907 3R3K
Q903 UN2211
IL904 CEL1397
IL905 CEL1397
IL906 CEL1397
IL901 CEL1398
IL902 CEL1398
IL903 CEL1398
A
Gr
ILLUMINATION COLOR SWITCH (AMBER/GREEN)
IC901
PDX002A
LCD DRIVER
VSS 1
X1 2
X0 3
MOD1 5
MOD0 6
KYDT 8
DPDT 9
REMIN10
DILM11
SILM12
KD4 13
KD3 14
KD2 15
KD1 16
KS6 17
KS5 18
KS4 19
KS3 20
KS2 21
KS1 22
VDD 23
SEG34
SEG33
80 V1
79 V2
78 VLCD
77 COM0
76 COM1
75 COM2
74 COM3
73 SEG0
72 SEG1
71 SEG2
70 SEG3
69 SEG4
68 SEG5
67 SEG6
66 SEG7
65 SEG8
64 SEG9
63 SEG10
62 SEG11
61 SEG12
60 SEG13
59 SEG14
58 SEG15
57 SEG16
56 SEG17
55 SEG18
54 SEG19
53 SEG20
52 SEG21
51 SEG22
50 SEG23
49 SEG24
48 SEG25
47 SEG26
46 SEG27
45 SEG28
44 SEG29
43 SEG30
42 SEG31
41 SEG32
A
B
C
D
1
2
3
4
5
6

	DEH-615RDS/EW, X1B/EW	DEH-515RDS/EW, X1B/EW
IC902	RPM-678CBR	DELETE
R948	47	DELETE
C905	47/6R3	DELETE

Fig.5

Connection Diagram

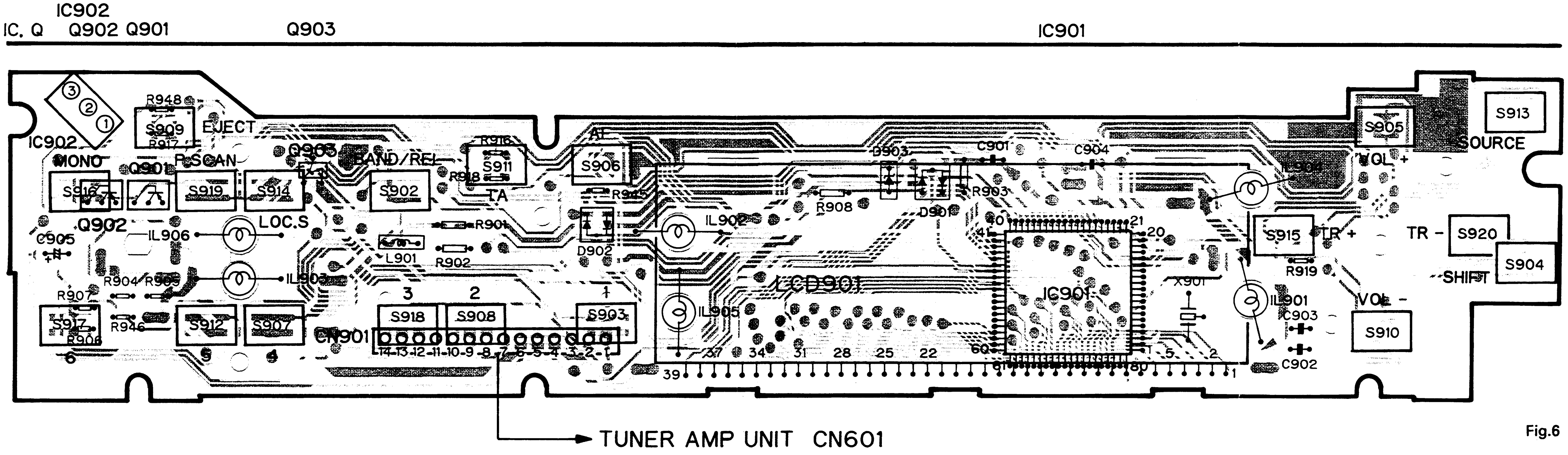

IC902
IC. Q
Q902
Q901
Q903
IC901
IC902
MONO
Q901
R.SCAN
EJECT
BAND/REL
TA
AF
S909
S916
S919
S914
S902
S911
S906
S905
S913
SOURCE
VOL +
Q902
LOC.S
IL906
IL903
IL902
IL905
IL904
IL901
LCD901
IC901
D903
D901
D902
C901
C904
C905
C902
C903
R948
R917
R916
R918
R945
R908
R903
R901
R902
R904
R905
R907
R946
R906
R919
L901
X901
S915
TR +
TR -
S920
S904
SHIFT
VOL -
S910
S917
S912
S907
S918
S908
S903
CN901
TUNER AMP UNIT CN601

Fig.6

2.4 TUNER UNIT

● Circuit Diagram

NOTE

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

TUNER UNIT

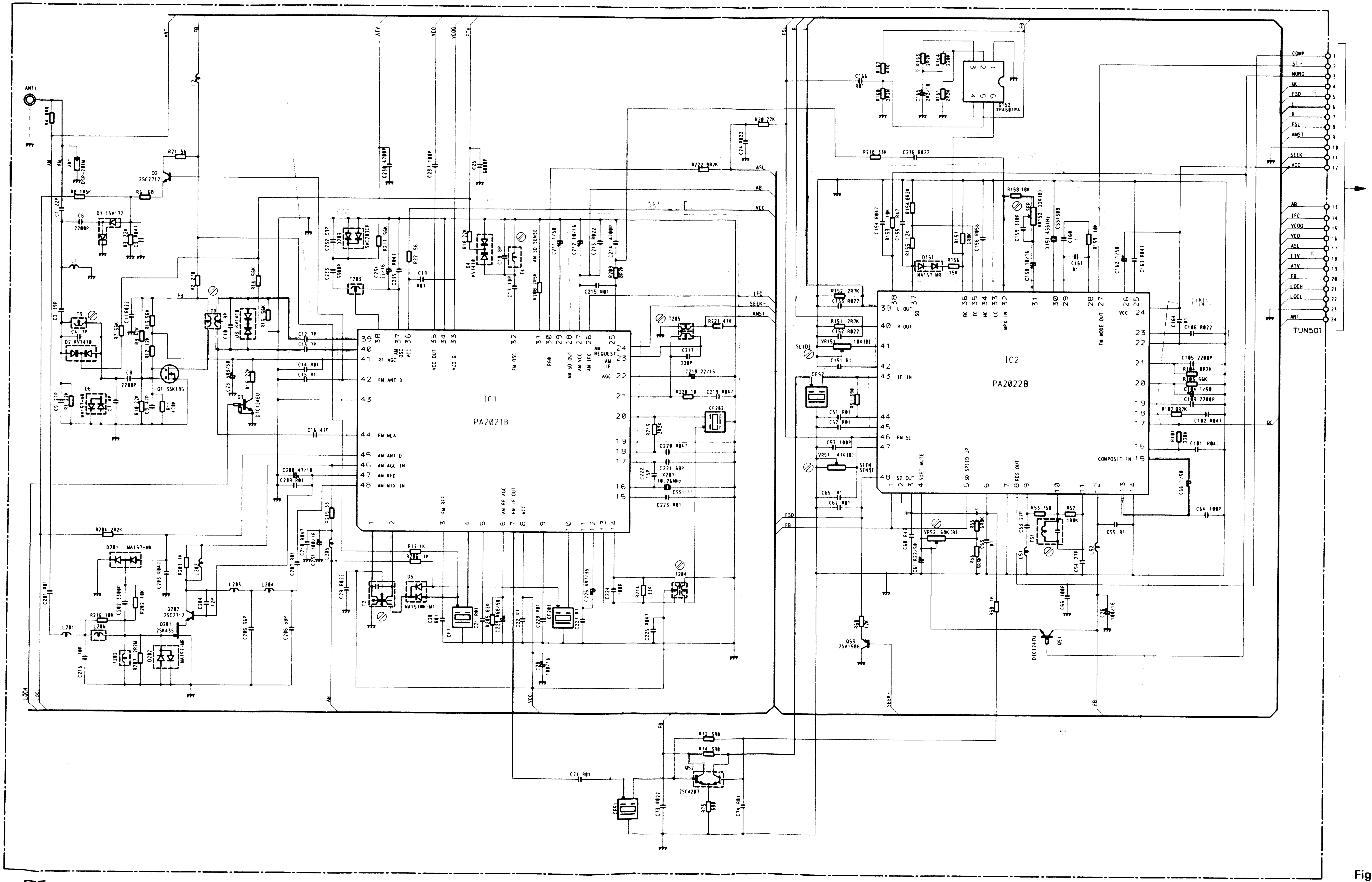

IC1
PA2021B
IC2
PA2022B
ANT1
Q1 3SK195
Q2 2SC2712
Q3 DTC124EU
Q51 DTC124TU
Q52 2SC4207
Q53 2SA1586
Q152 XP4601PA
Q201 2SK435
Q202 2SC2712
X201 10.26MHz
X151 456kHz
CF1
CF2
CF51
CF52
CF202
TUN501
TUNER AMP UNIT
COMP
ST-
MONO
QC
FSD
L
R
FSL
AMST
SEEK-
VCC
AB
IFC
VCOG
VCO
ASL
FTV
ATV
FB
LOCH
LOCL
ANT

Fig.7

● Connection Diagram

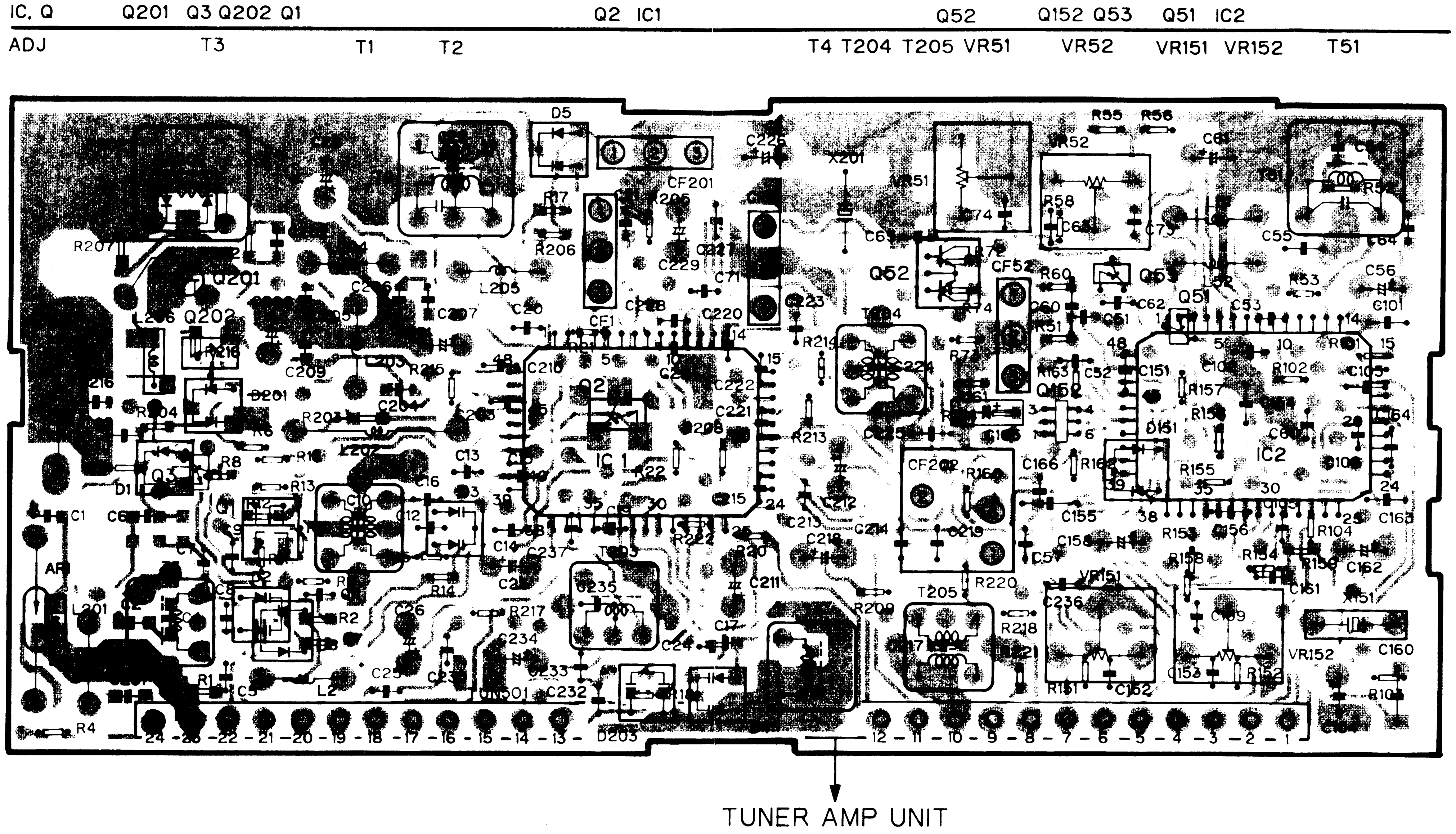

IC, Q
Q201
Q3
Q202
Q1
Q2
IC1
Q52
Q152
Q53
Q51
IC2
ADJ
T3
T1
T2
T4
T204
T205
VR51
VR52
VR151
VR152
T51
D5
CF201
X201
VR52
R55
R56
T51
R207
Q201
Q202
L205
C210
IC1
Q52
CF52
Q51
IC2
CF202
T205
VR151
VR152
X151
AR
L201
D201
D203
24 - 23 - 22 - 21 - 20 - 19 - 18 - 17 - 16 - 15 - 14 - 13
12 - 11 - 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1
TUNER AMP UNIT

Fig.8

3. CHASSIS EXPLODED VIEW

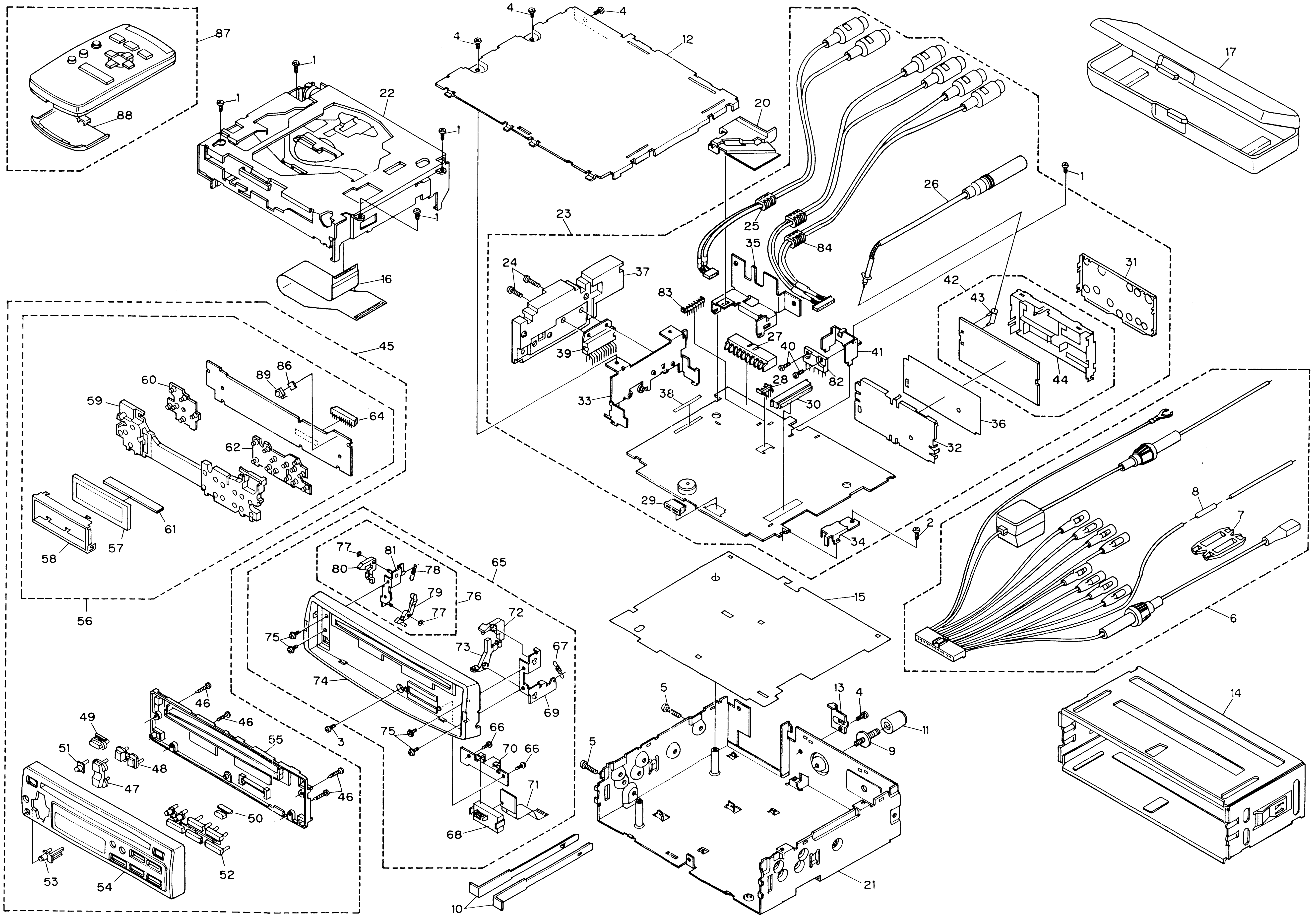

87
88
1
1
1
1
22
16
4
4
4
12
20
23
24
37
83
35
25
84
26
17
1
42
43
31
39
33
27
40
28
82
41
44
38
30
36
32
29
34
2
45
60
59
89
86
64
62
58
57
61
56
77
81
78
80
79
76
77
65
75
72
73
67
74
69
3
75
66
70
66
71
68
49
46
46
55
51
48
47
46
50
53
54
52
15
5
13
4
11
9
5
21
10
14
8
7
6

Fig.9

NOTES:

- Parts marked by "✱"are generally unavailable because they are not in our Master Spare Parts List.
- **Parts List(DEH-615RDS/EW)**

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ26P080FMC
	3	Screw	PSS26P080FZK
	4	Screw	BSZ30P060FMC
	5	Screw	BSZ30P120FMC
	6	Cord Assy	CDE4325
	7	Cap	CNS1472
	8	Resistor	RS1/2P102JL
	9	Screw	CBA1284
	10	Handle	CNC4947
	11	Bush	CNV1009
	12	Case	CNB1817
	13	Holder	CNC3850
	14	Holder	CNC4946
	15	Insulator	CNM3726
	16	P.C.Board	CNP3534
	17	Case	CNS3090
	18	·····	
	19	·····	
	20	Holder	CNV3620
	21	Chassis Unit	CXA6982
	22	CD Mechanism Module	CXK2813
	23	Tuner Amp Unit	CWX1826
	24	Screw	BSZ26P120FMC
	25	·····	
	26	Antenna Cable	CDH1146
	27	Plug(CN951)	CKM1139
	28	·····	
	29	Connector(CN601)	CKS1529
	30	Connector(CN651)	CKS1546
	31	Holder	CNC4881
	32	Holder	CNC4882
	33	Bracket	CNC4940
	34	Holder	CNC5013
	35	Bracket	CNC5016
	36	Insulator	CNM3825
	37	Heat Sink	CNR1307
	38	Spacer	CNM3343
	39	IC(IC551)	PA3029B
	40	Screw	BSZ30P060FMC
	41	Bracket	CNC5014
	42	Tuner Unit	CWE1374
	43	Antenna Jack	CKX1043
	44	Holder	CNC4880
	45	Detach Grille Assy	CXA6943

Mark	No.	Description	Part No.
	46	Screw	BUZ20P100FZK
	47	Button(+-)	CAC4091
	48	Button(<>)	CAC4092
	49	Button(SOURCE)	CAC4094
	50	Button(EJECT)	CAC4095
	51	Button	CAC4096
	52	Button	CAC4097
	53	Button	CAC3744
	54	Grille Unit	CXA6914
	55	Cover	CNS2818
	56	Key Board Unit	CWX1773
	57	LCD	CAW1309
	58	Holder	CNC5009
	59	Lens Unit	CXA7655
	60	Rubber	CNV3989
	61	Connector	CNV3673
	62	Rubber	CNV3988
	63	·····	
	64	Plug(CN901)	CKS2402
	65	Panel Assy	CXA5875
	66	Screw	BPZ20P060FMC
	67	Spring	CBH1659
	68	Socket	CKS2782
	69	Holder	CNC4943
	70	Holder	CNC4944
	71	P.C.Board	CNP3532
	72	Arm	CNV3696
	73	Arm	CNV3697
	74	Panel Unit	CXA5913
	75	Screw	PMS20P030FZK
	76	Detach Mechanism Unit	CXA5188
	77	Washer	CBF1039
	78	Spring	CBH1484
	79	Arm	CNV3292
	80	Arm	CNV3293
	81	Holder Unit	CXA5124
	82	IC(IC971)	PA2023A
	83	Plug(CN851)	CKS1242
	84	Cord	CDE4138
	85	·····	
	86	Spacer	CNM4223
	87	Remote Control Assy	CXA6155
	88	Battery Cover	CNS2150
	89	IC(IC902)	RPM-678CBR

- The DEH-615RDS/X1B/EW, DEH-515RDS/EW, and DEH-515RDS/X1B/EW Parts Lists enumerate the parts which differ from those enumerated in the DEH-615RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-615RDS/EW Parts List is given on page 41.

Mark	No.	Description	DEH-615RDS/EW, X1B/EW	DEH-515RDS/EW, X1B/EW
			Part No.	Part No.
	21	Chassis Unit	CXA6982	CXA6981
	23	Tuner Amp Unit	CWX1826	CWX1825
	25	Cord	·····	CDE4136
	28	Plug(CN851)	·····	CKS1238
	35	Bracket	CNC5016	CNC5015
	45	Detach Grille Assy	CXA6943	CXA6942
	54	Grille Unit	CXA6914	CXA6913
	56	Key Board Unit	CWX1773	CWX1772
	83	Plug(CN851)	CKS1242	·····
	84	Cord	CDE4138	·····
	86	Spacer	CNM4223	·····
	87	Remote Control Assy	CXA6155	·····
	88	Battery Cover	CNS2850	·····
	89	IC(IC902)	RPM-678CBR	·····

4. CD MECHANISM MODULE EXPLODED VIEW

- **Parts List**

Mark	No.	Description	Part No.
	1	Screw	PMS26P040FMC
	2	Control Unit	CWX1796
	3	Connector(CN1001)	CKS1955
	4	Connector(CN1701)	CKS2775
	5	Connector(CN1002)	CKS2811
	6	Connector(CN1801)	CKS2196
	7	CD Mechanism Unit	CXA6965
	8	Screw	BMZ20P030FMC
	9	Screw	BSZ20P040FMC
	10	Screw	CBA1250
	11	Screw	CBA1077
	12	Screw	CBA1230
	13	Screw	CBA1296
	14	Washer	CBF1038
	15	Washer	CBF1060
	16	Spring	CBH1415
	17	Spring	CBH1417
	18	Spring	CBH1418
	19	Spring	CBH1421
	20	Spring	CBH1423
	21	Spring	CBH1457
	22	Spring	CBH1552
	23	Spring	CBH1553
	24	Spring	CBH1554
	25	Spring	CBH1665
	26	Spring	CBH1556
	27	Spring	CBH1557
	28	Spring	CBH1558
	29	Spring	CBH1664
	30	Spring	CBH1560
	31	Spring	CBH1576
	32	Spring	CBH1577
	33	Spring	CBH1666
	34	Spring	CBH1583
	35	Spring	CBH1628
	36	Spring	CBL1170
	37	Spring	CBL1171
	38	Spring	CBL1200
	39	Connector	CDE4147
	40	PU Unit	CGY1031
	41	Shaft	CLA2220
	42	Roller	CLA2255
	43	Shaft	CLA2256
	44	Frame	CNC5661
	45	Arm	CNC5565
	46	Lever	CNC4891
	47	Lever	CNC4892
	48	Bracket	CNC4893
	49	Arm	CNC4895
	50	Arm	CNC5566

Mark	No.	Description	Part No.
	51	Bracket	CNC5424
	52	Spacer	CNM3315
	53	Holder	CNV4018
	54	Sheet	CNM3693
	55	Bracket	CNM3917
	56	Belt	CNT1053
	57	Clamper Unit	CXA6999
	58	Guide	CNV2891
	59	Holder	CNV3276
*	60	Roller	CNV3412
	61	Damper	CNV3974
	62	Arm	CNV3565
	63	Arm	CNV3992
	64	Gear	CNV3567
	65	Gear	CNV3568
	66	Gear	CNV3569
	67	Gear	CNV3570
	68	Arm	CNV3571
	69	Holder	CNV3572
	70	Gear	CNV3573
	71	Holder	CNV3574
	72	Holder	CNV4067
	73	Holder	CNV3576
	74	Rack	CNV3577
	75	Arm	CNV3578
	76	Plate	CNV3629
	77	Guide	CNV3694
*	78	Gathering P.C.Board	CNX2103
	79	Gathering P.C.Board	CNX2128
	80	Screw Unit	CXA2375

Mark	No.	Description	Part No.
	81	Motor Unit	CXA7150
	82	Chassis Unit	CXA6979
	83	Arm Unit	CXA5603
	84	Arm Unit	CXA5604
	85	Bracket Unit	CXA5605
	86	Lever Unit	CXA6975
	87	Arm Unit	CXA5607
	88	Arm Unit	CXA5608
	89	Gear Unit	CXA6976
	90	Motor Unit	CXA5703
	91	Bracket Unit	CXA5938
	92	Frame Unit	CXA6192
	93	Motor Unit	CXA6456
	94	Screw	JFZ17P035FNI
	95	Screw	JFZ20P014FMC
	96	Screw	JFZ20P020FZK
	97	Screw	JFZ20P025FMC
	98	Photo-transistor	PT4800
	99	Washer	YE15FUC
	100	Washer	YE20FUC
	101	•••••	
	102	Sheet	CNM4028
	103	Spring	CBH1710
	104	Spacer	CNC5436
	105	Screw	JFZ20P045FMC
	106	Washer	CBF1061
	107	Cushion	CNM4089
	108	Bracket	CNM3917
	109	Cushion	CXX1136

A

B

C

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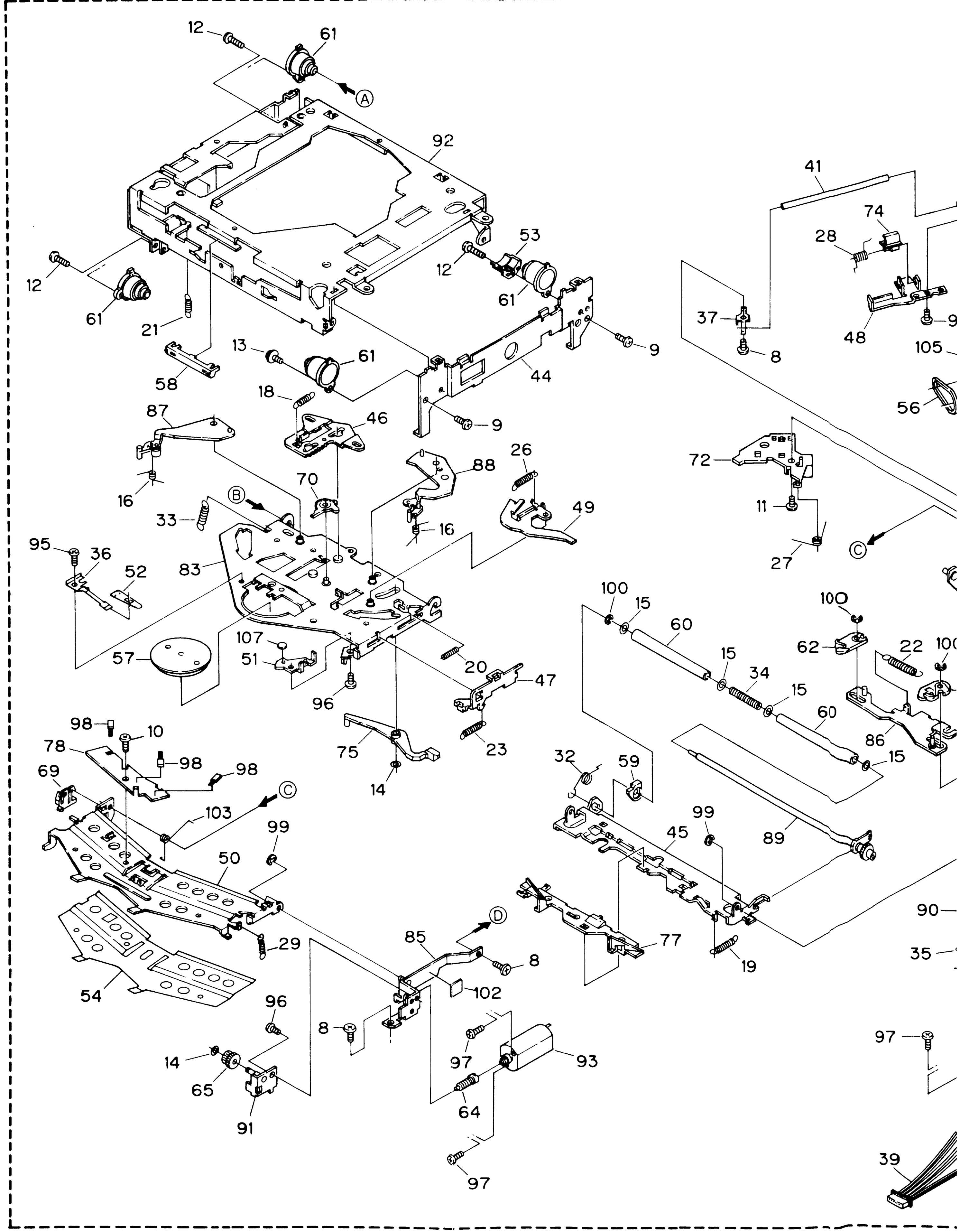
● CD Mechanism Module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'art No.
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:XA6979
:XA5603
:XA5604
:XA5605

:XA6975
:XA5607
:XA5608
:XA6976
:XA5703

:XA5938
:XA6192
:XA6456
FZ17P035FNI
FZ20P014FMC

FZ20P020FZK
FZ20P025FMC
'T4800
'E15FUC
'E20FUC

:NM4028
:BH1710
:NC5436
FZ20P045FMC

:BF1061
:NM4089
:NM3917
:XX1136

● CD Mechanism Module

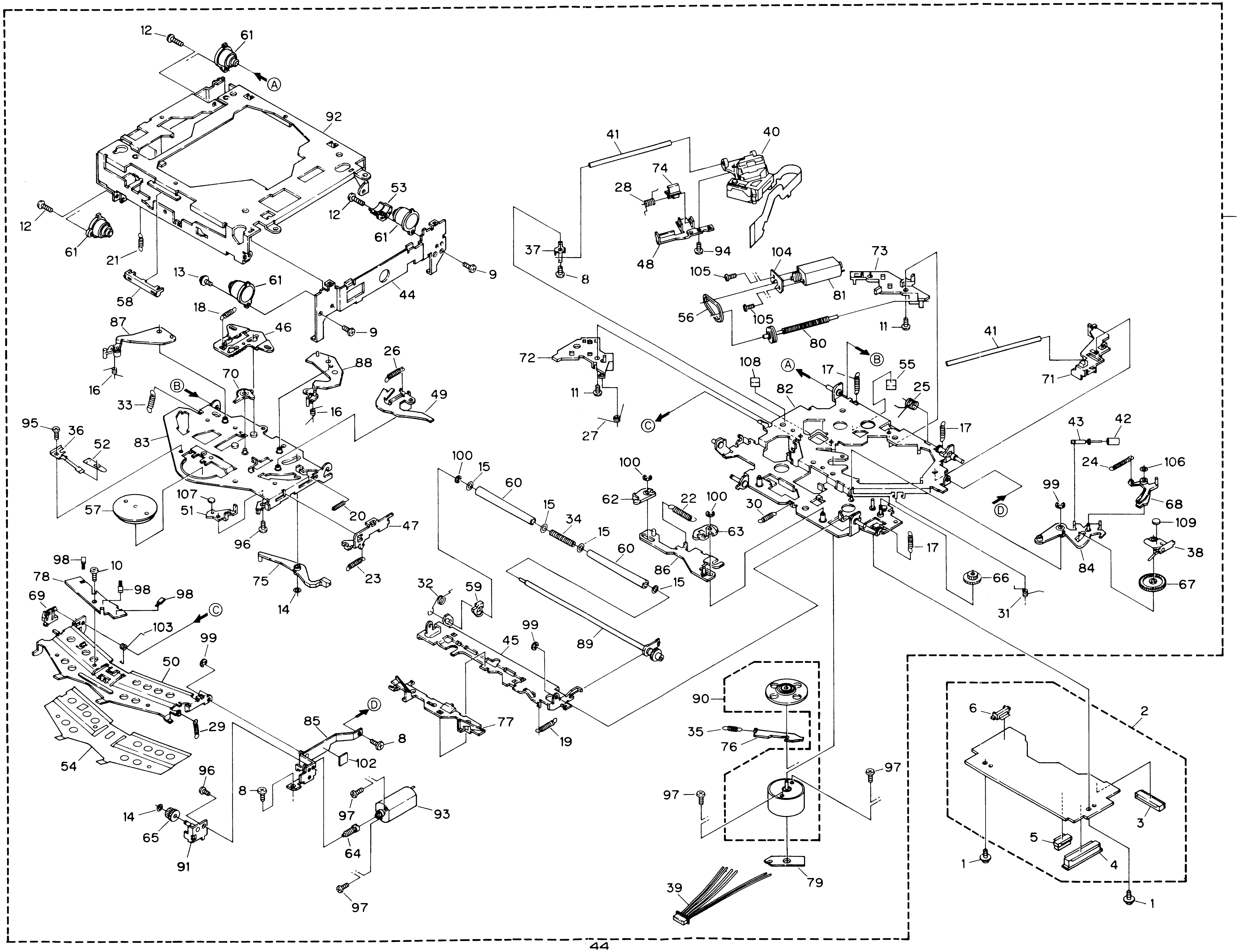
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Fig.10

5. PACKING METHOD

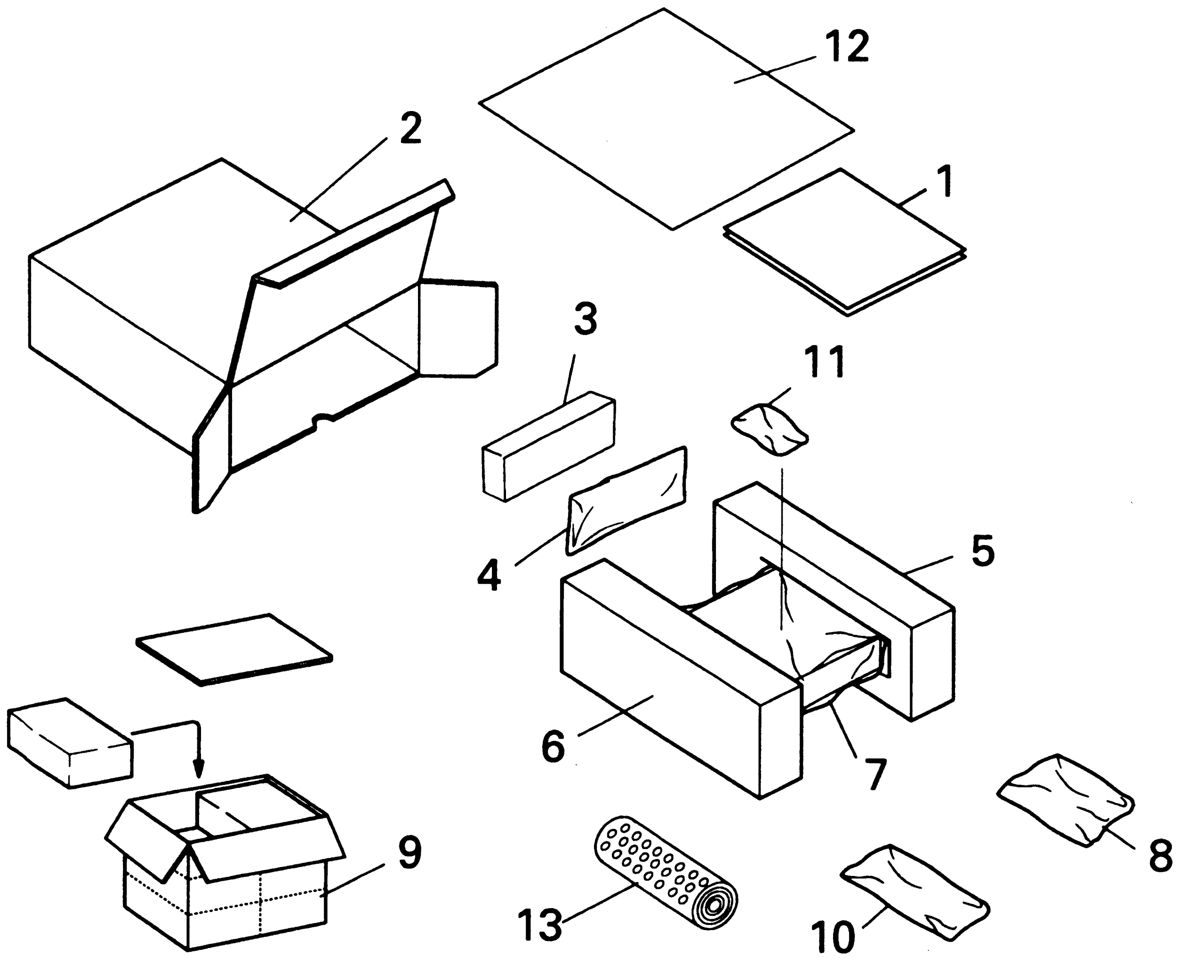
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Fig.11

- **Parts List(DEH-615RDS/EW)**

✱: Non Spare Part

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD1836
	1-2	Owner's Manual	CRD1837
	1-3	Installation Manual	CRD1838
✱	1-4	Warranty Card	CRY1071
✱	1-5	Passport	CRY1013
✱	1-6	·····	
	2	Carton	CHG2568
	3	Case	CNS3090
	4	Cord Assy	CDE4325
	5	Protector	CHP1603
	6	Protector	CHP1602
	7	Cover	CEG1092
	8	Accessory Assy	CEA1917
	9	Contain Box	CHL2568
	10	Accessory Assy	CEA1473
	11-1	Remote Control Assy	CXA6155
	11-2	Air Cushioned Bag	CEG1055
	12	Spacer	CHW1387
	13	Air Cushioned Bag	CEG1168

Owner's Manual

Model	Part No.	Language
DEH-615RDS/EW, X1B/EW	CRD1836	English,French,Italian,German,Dutch,Spanish,Portuguese
DEH-615RDS/EW, X1B/EW	CRD1837	Swedish,Norwegian,Finnish

Installation Manual

Model	Part No.	Language
DEH-615RDS/EW, X1B/EW DEH-515RDS/EW, X1B/EW	CRD1838	English,French,Italian,German,Dutch,Spanish,Portuguese Swedish,Norwegian,Finnish

- The DEH-615RDS/X1B/EW, DEH-515RDS/EW, and DEH-515RDS/X1B/EW Parts Lists enumerate the parts which differ from those enumerated in the DEH-615RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-615RDS/EW Parts List is given on page 46.

Mark	No.	Description	615RDS/EW Part No.	515RDS/EW Part No.	615RDS/X1B/EW Part No.	515RDS/X1B/EW Part No.
✱	1-4	Warranty Card	CRY1071	CRY1071	·····	·····
✱	1-5	Passport	CRY1013	CRY1013	CRY1014	CRY1014
✱	1-6	Card	·····	·····	URY-001	URY-001
	2	Carton	CHG2568	CHG2569	CHG2568	CHG2569
	3	Case	CNS3090	CNS3090	UNS2269	UNS2269
	5	Protector	CHP1603	CHP1603	·····	·····
	6	Protector	CHP1602	CHP1602	UHP-009	UHP-009
	7	Cover	CEG1092	CEG1092	UEG-002	UEG-002
	9	Contain Box	CHL2568	CHL2569	UHD-002	UHD-002
	10	Accessory Assy	CEA1473	·····	CEA1473	·····
	11-1	Remote Control Assy	CXA6155	·····	CXA6155	·····
	11-2	Air Cushioned Bag	CEG1055	·····	CEG1055	·····

- **Accessory Assy**

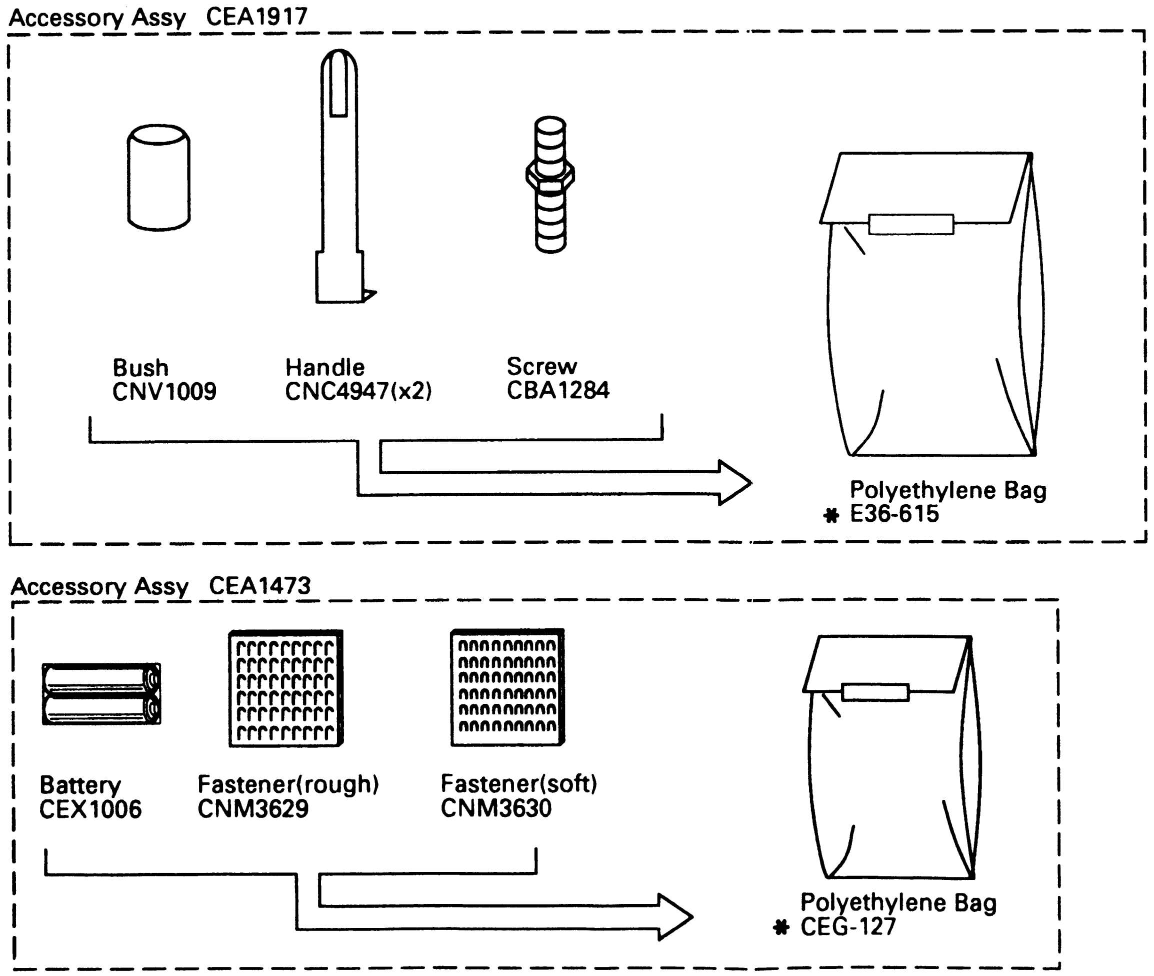
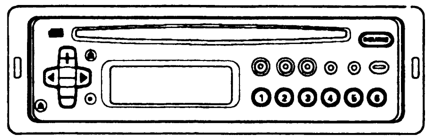

Accessory Assy CEA1917
Bush
CNV1009
Handle
CNC4947(x2)
Screw
CBA1284
Polyethylene Bag
✱ E36-615
Accessory Assy CEA1473
Battery
CEX1006
Fastener(rough)
CNM3629
Fastener(soft)
CNM3630
Polyethylene Bag
✱ CEG-127

Fig.12

PIONEER
The Art of Entertainment

Service Manual

- DEH-605RDS



ORDER NO.
CRT1563

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-605RDS EW,X1B/EW

HIGH POWER CD PLAYER WITH FM/MW/LW TUNER

DEH-505SDK GR
DEH-505 EW,X1B/EW
DEH-405SDK GR
DEH-405 EW,X1B/EW

- **See the service manual CX-540(CRT1574) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of CX-540 series.**

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY.LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL:[03]580-9911

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K-FFK. JAN. 1994 Printed in Japan

CHAPTER 1

● CD Player Service Precautions

1. For pickup unit(CGY1031) handling,please refer to"Disassembly"(CX-540 Service Manual CRT1574). During replacement,handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly,be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.

SAFETY INFORMATION

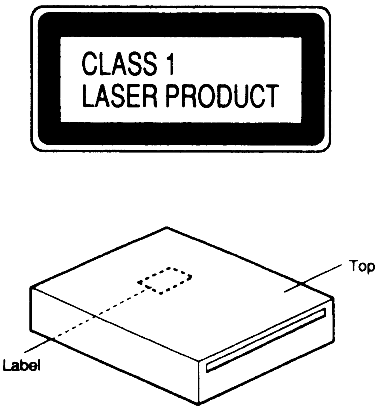
1. Safety Precautions for those who Service this Unit.

- **Follow the adjustment steps (see pages 1-26 through 1-32)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

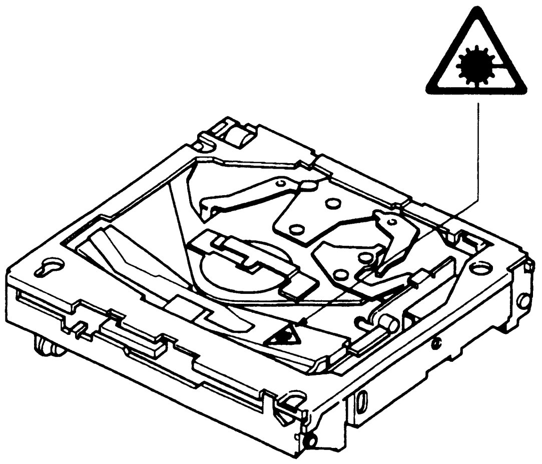
Caution:

1. **During repair or tests, minimum distance of 13cm from the focus lens must be kept.**
2. **During repair or tests, do not view laser beam for 10 seconds or longer.**

2. A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.



3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 785 nanometers
Radiant power = 69.7 microwatts(Through a circular aperture stop having a diameter of 80 millimeters)
0.55 microwatts(Through a circular aperture stop having a diameter of 7 millimeters)

1. SPECIFICATIONS

General

Power source	14.4 V DC (10.8 — 15.6 V allowable)
Grounding system	Negative type
Max. current consumption	6 A
Dimensions (chassis)	178 (W) × 50 (H) × 150 (D) mm
(front face)	188 (W) × 58 (H) × 20 (D) mm
Weight	1.5 kg

Amplifier

Max. power output	22 W × 4 (EIAJ)
Continuous power output	14 W × 4 (DIN 45324, +B=14.4 V)
Load impedance	4Ω (4 — 8Ω allowable)
Preout output level/ output impedance	500 mV/1 kΩ
Tone controls (bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	+10 dB (100 Hz), +7 dB (10 kHz) (volume: –30 dB)

CD player

System	Compact disc audio system
Usable discs	Compact disc
Signal format	Sampling frequency: 44.1 kHz Number of quantization bits: 16; linear
Frequency characteristics	5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A network)
Dynamic range	90 dB (1 kHz)
Number of channels	2 (stereo)

FM tuner

Frequency range	87.5 — 108 MHz
Usable sensitivity	11 dBf (1.0µV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7µV/75Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response	30 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	531 — 1,602 kHz
Usable sensitivity	18µV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

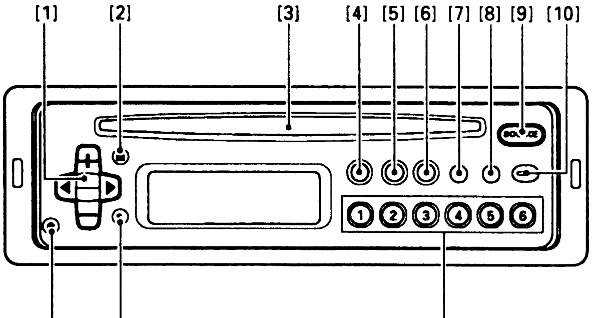
LW tuner

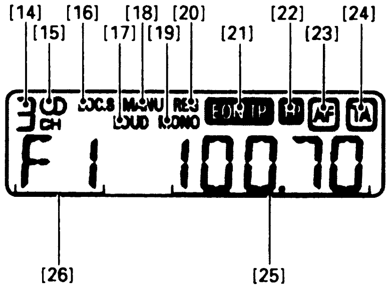
Frequency range	153 — 281 kHz
Usable sensitivity	30µV (30 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

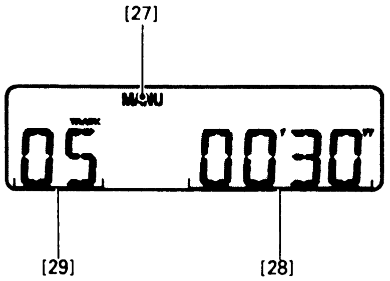
Note:

Specifications and the design are subject to possible modification without notice due to improvements.

2. OPERATION AND CONNECTION







Changing the Source

Parts Identification

[9] Source

Changing the Source

Each time the button [9] is pressed, the source will change in the following sequence:
Built-in CD player → Tuner → OFF

- If there is no disc in the built-in CD player, the source will not change to "built-in CD player".

Adjusting the Audio

Parts Identification

[1] Volume/Audio adjustment
[12] Shift
[17] Loudness

Mode Selection

Each press of button [12] changes the mode as follows:
Volume adjustment (VOL) → Balance adjustment (FAD/BAL) → Tone adjustment (BAS/TRE) → Loudness adjustment (LOUD)

- When you're adjusting fader, balance, bass or treble, the indicator will stop at the center setting. About 8 seconds after adjustment, the display returns to its previous state.

Volume Adjustment

Pressing the (+) side of button [1] increases the volume, while the (–) side decreases it. (Display shows "VOL 00" ~ "VOL 30".)

- When driving your vehicle, be sure to keep the volume of the unit set low enough to allow you to hear sounds coming from outside.

Balance Adjustment

Press button [12] to select balance adjustment mode. ("FAD" appears on the display.) Adjust the fader using the (+) or (–) side of button [1]. To adjust the balance, press either the (◀) or (▶) side of button [1] to turn on BAL.

Fader

Press the (+) side of button [1] to raise the volume of the front speaker only. Press the (–) side of the button to raise the volume of the rear speaker only.
(Display shows "FAD F9" ~ "FAD R9".)

- Please set "FAD 0" when using 2 speaker system.

Balance

Pressing the (◀) side of button [1] shifts the balance to the left speaker, while the (▶) side shifts it to the right speaker.
(Display shows "BAL L9" ~ "BAL R9".)

Tone Adjustment

Press button [12] to select tone adjustment mode. ("BAS" appears.) Select the tone you wish to adjust using the (◀) or (▶) side of button [1]. Each press of the (▶) side changes the tone from BAS → TRE, while each press of the (◀) side changes the tone from TRE → BAS.

Bass Adjustment

Select the Bass mode.
Pressing the (+) side of button [1] increases bass, while the (–) side decreases bass.
(Display shows "BAS –6" ~ "BAS +6".)

Treble Adjustment

Select Treble adjustment mode.
Pressing the (+) side of button [1] increases treble, while the (–) side decreases treble.
(Display shows "TRE –6" ~ "TRE +6".)

Loudness Adjustment

This "loudness" function enhances both the high and low ranges of sound to give even more power to output even at low volume.
Press button [12] to select loudness adjustment mode. (The "LOUD" indicator appears on the display.)
Pressing the (▶) side of button [1] turns the loudness function on (LOUD [17] light up), pressing the (◀) side turns it off.

Using the Tuner

Parts Identification

[1] Tuning
  Seek/Manual
  Local Seek Sensitivity
[4] Local mode
[5] BSM/Preset Scan
[6] FM Monaural
[7] AF/REG
[8] TA/EON
[9] Source
[10] Band
[11] Preset
[14] Preset Number
[15] FM Stereo
[16] Local mode
[18] Manual
[19] FM Monaural
[20] REG
[21] EON
[22] TP
[23] AF
[24] TA
[25] Frequency
[26] Band

Electronic Tuner

Frequency allocation differs depending upon the area. This unit has been designed in accordance with the frequency allocations for Western Europe, Asia, the Middle and Near East, Africa, Australia and Oceania. Use in other areas may result in improer reception of AM. The RDS function does not work in regions with no RDS broadcast services.

Listening to the Radio

1. Set the source to "tuner" by pressing button [9].
   - For details, refer to "Changing the Source" on page 1-4.
2. Select the band by pressing button [10]. Each time the button is pressed, the band will change in the following sequence: FM1 → FM2 → FM3 → MW/LW
   - MW and LW are combined in one band.
3. Use seek tuning or manual tuning to tune to a radio station.

3-1. Set the tuning mode to "seek" or "manual" by pressing the (◀) and (▶) sides of button [1] simultaneously. Repeat this operation to switch to the other tuning mode. (When the manual tuning mode is set, "MANU" [18] will be displayed.)

3-2. Tune by Press (◀) or (▶) of button [1]. (When there is a stereo broadcast, "ꝏ" [15] will be displayed.)

Seek Tuning:

When the button is pressed, stations whose signal strength is above a certain level will be tuned automatically.

Manual Tuning:

When the button is pressed, the frequency will change by one step up or down.

Using the Preset Memory

The radio stations can be stored in memory under buttons 1 to 6 of [11].

1. Tune in to the station to be stored in memory.
2. Store the station in memory by pressing one of the buttons (1 to 6) for at least 2 seconds. When the [14] number stops blinking, the station will be stored in memory under the button pressed.
   - Up to 18 FM stations and 6 MW/LW stations can be stored in memory.

Preset Tuning

The radio stations stored in memory can be recalled by pressing the respective button 1 to 6 of [11]. The station stored under that button will be recalled. (The number of the button pressed will be displayed at [14].)

Using the Best Stations Memory (BSM)

The radio stations having a strong signal can be tuned automatically and stored in memory under buttons 1 to 6 [11]. Press button [5] for at least 2 seconds. (The "BSM" will blink.) After "BSM" stops blinking, the stations will be stored in memory under buttons 1 to 6 of [11].

- BSM can be canceled mid-operation by pressing button [5].
- The stations will be stored under buttons 1 to 6 in the order of their signal strength. The strongest station will be stored under button 1, followed by stations with lower signal strengths.
- If there are fewer than 6 stations whose signal is strong, there will be spare memory.
- It will take almost 30 seconds for BSM to be completed.

Preset Scan Tuning

This recalls in sequence all the stations stored in memory under the buttons [11] for 8 seconds each. Press button [5]. (The [14] number will blink.) To cancel, press the button again. After the desired station is tuned, cancel the preset scan tuning. The station will then continue to be received.

- Stations stored in memory under the buttons [11] but whose signal is weak will not be recalled.

Local Seek Tuning

When the local mode is set, the seek tuning's sensitivity level will become high and only stations with a strong signal will be seek tuned. The local mode's seek sensitivity can be adjusted.

Setting the Local Mode

Press button [4]. (The "LOC.S" [16] will light.) To cancel the local mode, press the button again.

Adjusting the Local Seek Sensitivity

There are 4 local seek sensitivity steps for FM and 2 steps for MW/LW.

- LOC-4 is the highest seek tuning sensitivity level. Only the stations with a strong signal are tuned. LOC-3, LOC-2, and LOC-1 in descending order enables the tuning of stations with a respectively weaker signal.

1. Set to local seek sensitivity adjustment mode. Press button [4] for at least 2 seconds. (The current sensitivity level "LOC-2" will be displayed.)
   - The local seek sensitivity adjustment mode will be canceled after about 5 seconds.
2. Adjust the sensitivity level by pressing (◀) or (▶) of button [1].

FM Monaural Reception

If a stereo broadcast has a lot of noise, switching to the monaural reception mode will reduce the noise. Press button [6]. ("MONO" [19] will appear on the display.) To cancel, press the button again.

Playing Compact Discs

Parts Identification

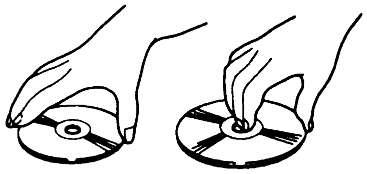
[1] Track Number Search
Fast Forward and Reverse
[2] Eject
[3] Disc Insertion Slot
[9] Source
[11] ① Pause
② Repeat
③ Random play
[27] Manual
[28] Playback time
[29] Track number

Discs

- Only use compact discs (optical digital audio discs) bearing the mark shown below.

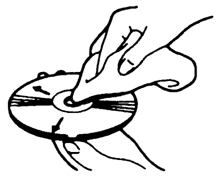
COMPACT
disc
DIGITAL AUDIO

- Do not use cracked, scratched, or warped discs.
- Do not touch the disc's playing side. Handle the disc as shown below.



- Do not affix any label on the disc.
- Do not apply any vinyl record spray, anti-static agent, benzene, paint thinner, or any other volatile chemicals.

- Do not play a dirty disc. Use a soft cloth to clean a dirty disc as shown below. Wipe the disc outward from the center.



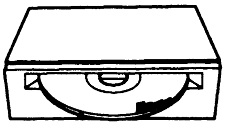
- Do not place the disc in high temperatures and direct sunlight.
- Be sure to store the disc in its case.

CD Playing Environment

- Disc playback may be interrupted by sudden road shock.
- When the air temperature is low and the car heater is turned on, condensation on the disc and internal parts of the unit may prevent proper playback operation. If this happens, turn off the unit and wait one hour until the condensation is gone. Also, use a soft cloth to wipe off any condensation from the disc.

Listening to the CD Player

1. With the label side up, insert a disc into [3]. Playback will start. (The track number [29] and playback time [28] will be displayed.)
   - Do not insert the disc with the label side down. Doing so may scratch the disc.
   - If the disc stops midway while it is being inserted or if there is no playback after a disc is inserted, something may be wrong with the disc. Eject the disc and check it.
2. Turn ON/OFF the disc playback. Press button [9] to change the source.
   - For details, refer to "Changing the Source".
3. Eject the disc by pressing button [2].
   - Do not leave the disc halfway into the unit as shown below. Doing so may cause the disc to be bent or dropped.



Using Track Number Search, Fast Forward and Reverse

1. Set the mode to "track number search " or "fast forward and reverse".
   Press the (◀) and (▶) sides of button [1] simultaneously. Each time this is repeated, the mode will switch between the track number search mode and fast forward and reverse mode. (When the fast forward and reverse mode is set, "MANU" [27] will light.)
2. Execute a track number search or fast forward and reverse by pressing (◀) and (▶) of button [1].

- Playback sound can be heard during fast forward and reverse.

Pausing

The disc playback can be stopped temporarily by pressing ① of button [11]. (The "PAUSE" will be displayed.) To cancel the pause, press the button again.

Repeat

1. To repeat the music you are listening to, press button ② of [11] ("RPT" will appear on the display).
2. To cancel music repeat, press button ② of [11] to turn off "RPT".

Random Play

1. To play music randomly, press button ③ of [11] ("RDM" will appear on the display). Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
2. To cancel random play, press button ③ of [11] to turn off "RDM".

- Since selections are played in random order, the same selection may be played twice in succession.

Error Display

If there is a problem with CD playback, an error code will be displayed.
(Ex.: "ERROR-10")
If an error is displayed, refer to the table below to identify the problem. If the error is displayed even after corrective action is taken, contact your dealer or the nearest authorized PIONEER Service Station.

D: **Display**
C: **Cause**
T: **Treatment**

D: ERROR-11, 12, 14, 17, 30
C: The disc is dirty.
T: Clean the disc.

D: ERROR-11, 12, 17, 30
C: The disc is scratched.
T: Replace the disc.

D: ERROR-11, 14, 17
C: The disc is inserted with the label side down.
T: Insert the disc with the label side up.

D: ERROR-14
C: An unrecorded CD-R is being used.
T: Check the disc.

D: **Display**
C: **Cause**
T: **Treatment**

D: ERROR-10, 11, 12, 14, 17, 30, A0
C: Electrical or mechanical fault.
T: Turn off the car's ignition and turn it back on again. Or change the source to another one and then change it back to CD.

D: HEAT
C: The CD player's internal temperature is high.
T: Wait until the CD player's internal temperature goes down.

Additional Functions

Parts Identification
[12] Illumination

Switching Illumination Color

The illumination color can be set to amber or green.
Press button [12] for at least 2 seconds. Repeat this operation to switch between amber and green.

Connecting the Units

Note:

- *This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.*
- *To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.*
- *After completing installation and wiring, double check that there are no mistakes. Re-install any parts removed from the car during installation, then connect the battery negative terminal.*
- *Refer to the owner's manual for details on connecting the various cords of the power amp and other units, them make connections correctly.*
- *Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.*
- *Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.*
- *Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.*
- *Do not shorten any leads. If you do, the protection circuit may fail to work when it should.*
- *Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.*
- *When replacing fuses, be sure to use only fuses of the rating prescribed on the fuse holder.*
- *Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.*
- *Speakers connected to this unit must be high-power type possessing maximum input of at least 22 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.*
- *When the power amp is being linked with this system, be sure not to connect the blue lead to the amp's power terminal. Likewise, when linking this system with the auto-antenna, do not connect to power terminal for the antenna. Such connection can make overcurrent cause malfunctions.*
- *When the unit is mounted in a vehicle whose ignition switch does not have the ACC (accessory) position as shown in Fig. 2, be sure to connect the red lead of the unit to the terminal controlled by the ignition switch ON/OFF position. If you do not, the vehicle battery may go flat when you leave your vehicle for several hours.*
  (Fig. 1: ACC position/Fig. 2: No ACC position)

Connection Diagram (Fig. 3)

1. Power amp (sold separately)
2. Connecting cords with RCA pin plugs (sold separately)
3. Blue
4. Front/left speaker
5. Front/right speaker
6. Green
7. Gray
8. Green/black
9. Gray/black
10. Rear/left speaker
11. Rear/right speaker
12. Green/red
13. Gray/red
14. Black/green
15. Black/gray
16. Connected only when the optional amplifier is used. Nothing is connected when operating the built-in amplifier itself.
17. White
18. Red
19. Rear out
20. Front out (DEH-605RDS, DEH-405 and DEH-405SDK do not have this terminal.)
21. Antenna jack
22. Blue
    To system control terminal of the power amp or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
23. Fuse holder
24. Fuse resistor
25. Black (ground)
    To vehicle (metal) body.
26. Orange
    To terminal always supplied with power regardless of ignition switch position.
27. Red
    To electric terminal controlled by ignition switch (12 V DC) ON/OFF.

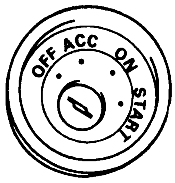

OFF
ACC
ON
START

Fig.1

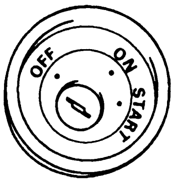

OFF
ON
START

Fig.2

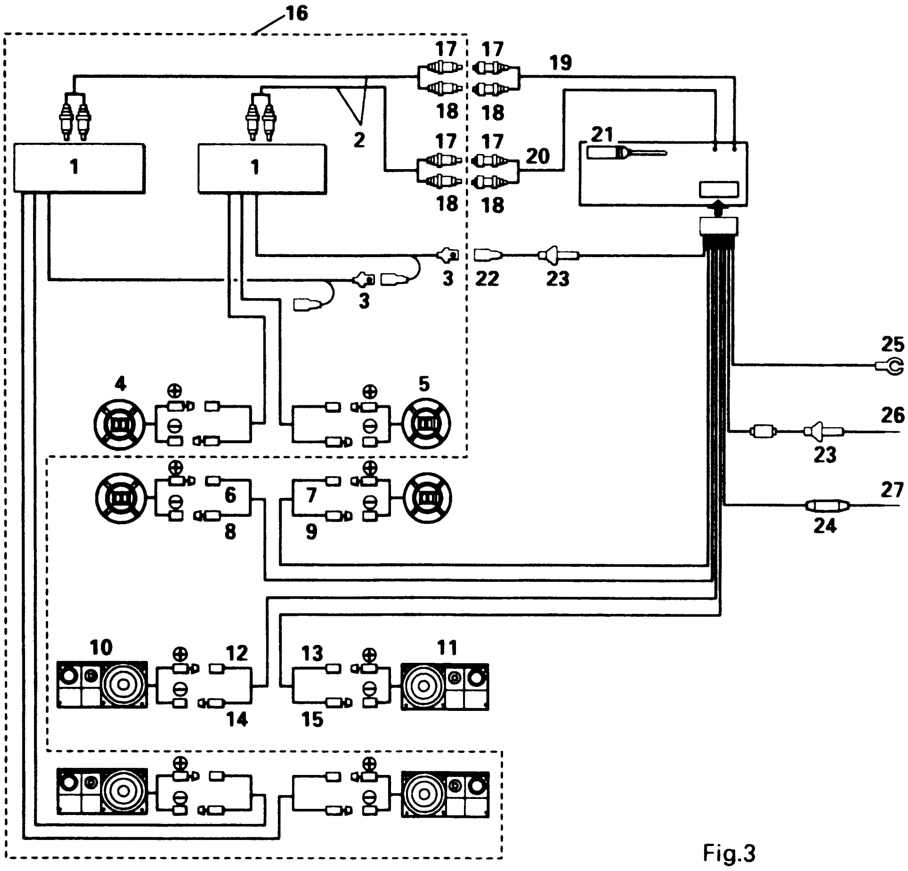

16
17
17
19
18
18
2
17
17
20
21
1
1
18
18
3
22
23
3
25
4
5
26
23
6
7
8
9
27
24
10
12
13
11
14
15
⊕
⊖

Fig.3

3. DISASSEMBLY

● Removing the Case

1.Remove the three screws.

2.Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

● Removing the Detach Grille Assy

1.Press the detach button, and then pull detach grille Assy.

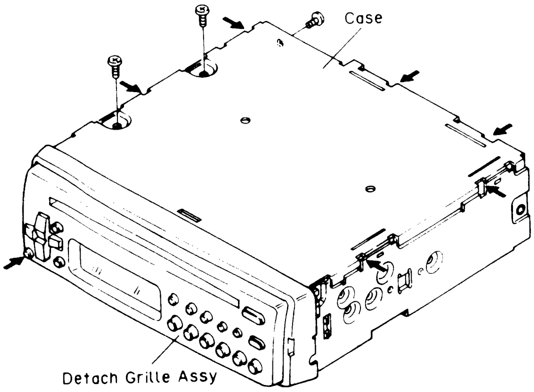

Case
Detach Grille Assy

Fig.4

● Removing the Panel Unit

1.Remove the screw B and disconnect the two stoppers indicated by arrows.

2.Disconnect the connector.

● Removing the CD Mechanism Module

1.Remove the four screws A.

2.Disconnect the connector.

3.Remove the CD Mechanism Module.

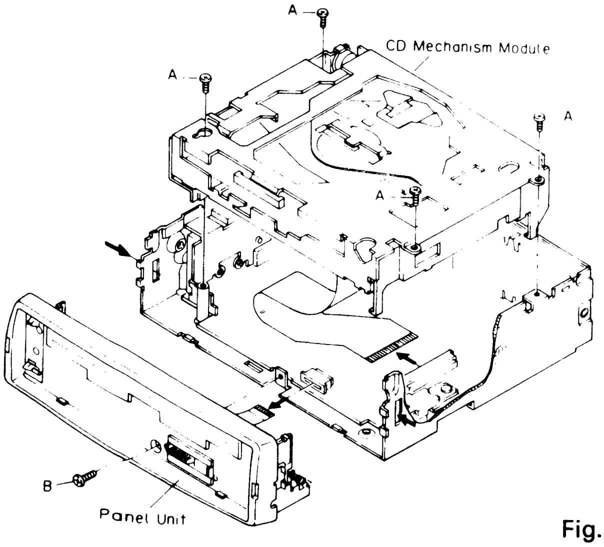

A
CD Mechanism Module
A
A
A
B
Panel Unit

Fig.5

● Removing the Chassis Unit

1.Remove the two screws C.

2.Remove the screw D and E.

3.Remove the screw F and then remove the holder.

4.Stretch the four claws.

5.Remove the chassis Unit

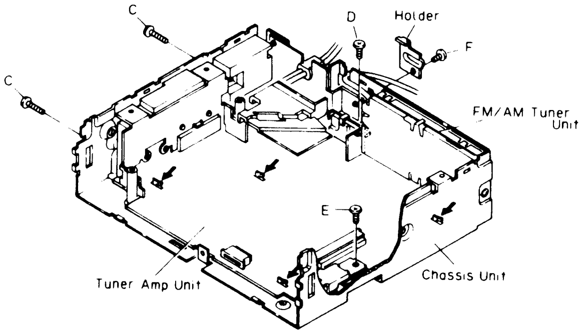
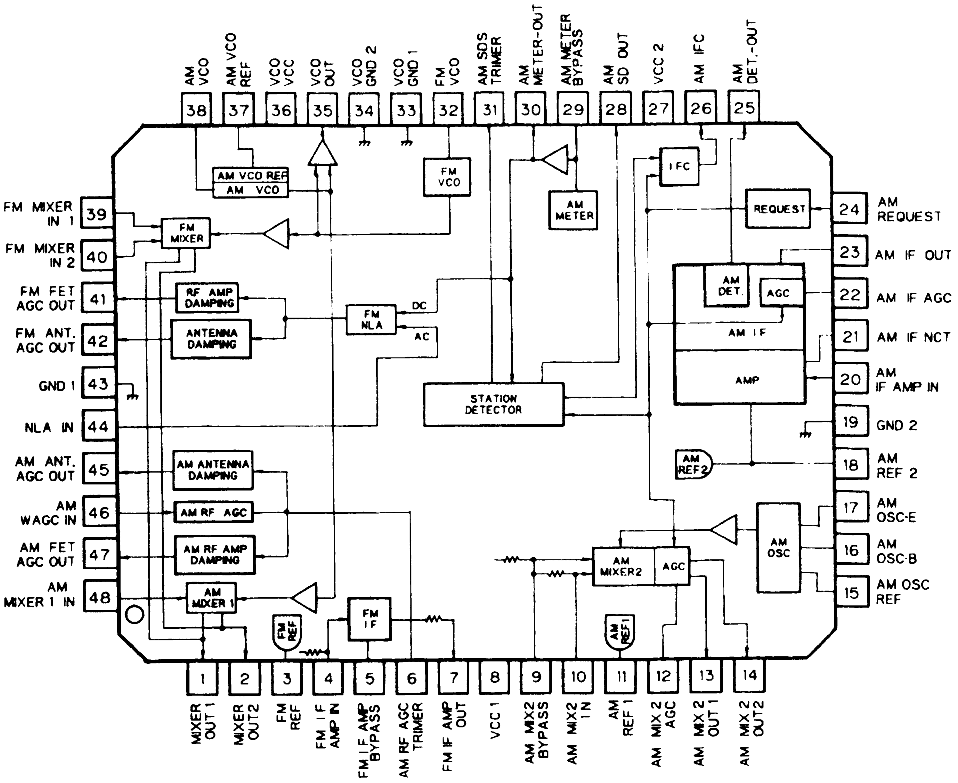

C
D
Holder
F
C
FM/AM Tuner Unit
E
Tuner Amp Unit
Chassis Unit

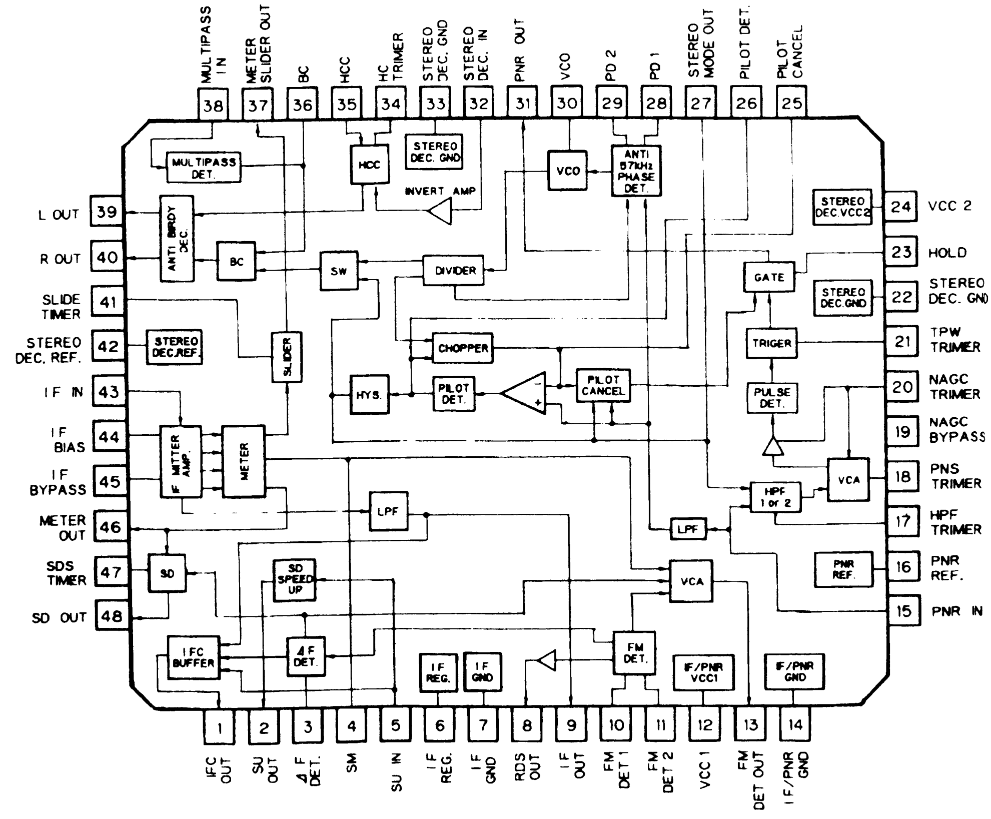
Fig.6

● ICs

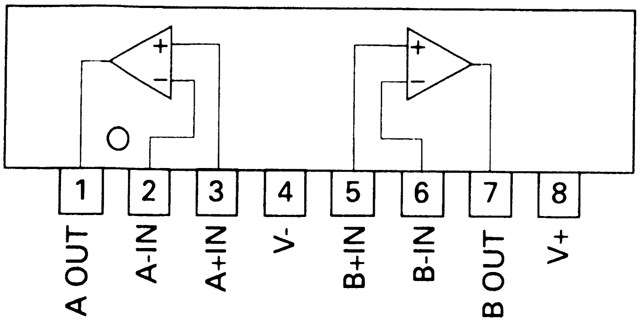
PA2021B


AM VCO
AM VCO REF
VCO VCC
VCO OUT
VCO GND 2
VCO GND 1
FM VCO
AM SDS TRIMER
AM METER-OUT
AM METER BYPASS
AM SD OUT
VCC 2
AM IFC
AM DET.-OUT
38
37
36
35
34
33
32
31
30
29
28
27
26
25
AM VCO REF
AM VCO
FM VCO
AM METER
IFC
REQUEST
FM MIXER IN 1
39
FM MIXER IN 2
40
FM FET AGC OUT
41
FM ANT. AGC OUT
42
GND 1
43
NLA IN
44
AM ANT. AGC OUT
45
AM WAGC IN
46
AM FET AGC OUT
47
AM MIXER 1 IN
48
FM MIXER
RF AMP DAMPING
ANTENNA DAMPING
FM NLA
DC
AC
STATION DETECTOR
AM DET.
AGC
AM IF
AMP
AM REF2
AM OSC
AM MIXER2
AGC
AM ANTENNA DAMPING
AM RF AGC
AM RF AMP DAMPING
AM MIXER 1
FM REF
FM IF
AM REF1
24
AM REQUEST
23
AM IF OUT
22
AM IF AGC
21
AM IF NCT
20
AM IF AMP IN
19
GND 2
18
AM REF 2
17
AM OSC-E
16
AM OSC-B
15
AM OSC REF
1
2
3
4
5
6
7
8
9
10
11
12
13
14
MIXER OUT 1
MIXER OUT2
FM REF
FM IF AMP IN
FM IF AMP BYPASS
AM RF AGC TRIMER
FM IF AMP OUT
VCC 1
AM MIX2 BYPASS
AM MIX2 IN
AM REF 1
AM MIX 2 AGC
AM MIX 2 OUT 1
AM MIX 2 OUT2

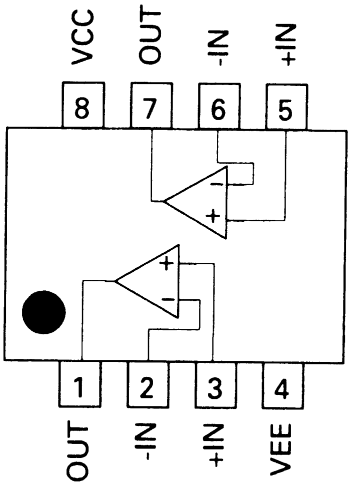
PA2022A


MULTIPASS IN
METER SLIDER OUT
BC
HCC
HC TRIMER
STEREO DEC. GND
STEREO DEC. IN
PNR OUT
VCO
PD 2
PD 1
STEREO MODE OUT
PILOT DET.
PILOT CANCEL
38
37
36
35
34
33
32
31
30
29
28
27
26
25
MULTIPASS DET.
HCC
STEREO DEC. GND
INVERT AMP
VCO
ANTI 57kHz PHASE DET.
STEREO DEC VCC2
L OUT
39
R OUT
40
SLIDE TIMER
41
STEREO DEC. REF.
42
IF IN
43
IF BIAS
44
IF BYPASS
45
METER OUT
46
SDS TIMER
47
SD OUT
48
ANTI BIRDY DEC.
BC
SW
DIVIDER
SLIDER
STEREO DEC.REF.
CHOPPER
HYS.
PILOT DET.
PILOT CANCEL
GATE
STEREO DEC.GND
TRIGER
PULSE DET.
VCA
HPF 1 or 2
LPF
PNR REF.
IF MITTER AMP.
METER
LPF
SD
SD SPEED UP
VCA
IFC BUFFER
ΔF DET.
IF REG.
IF GND
FM DET.
IF/PNR VCC1
IF/PNR GND
24
VCC 2
23
HOLD
22
STEREO DEC. GND
21
TPW TRIMER
20
NAGC TRIMER
19
NAGC BYPASS
18
PNS TRIMER
17
HPF TRIMER
16
PNR REF.
15
PNR IN
1
2
3
4
5
6
7
8
9
10
11
12
13
14
IFC OUT
SU OUT
ΔF DET.
SM
SU IN
IF REG.
IF GND
RDS OUT
IF OUT
FM DET 1
FM DET 2
VCC 1
FM DET OUT
IF/PNR GND

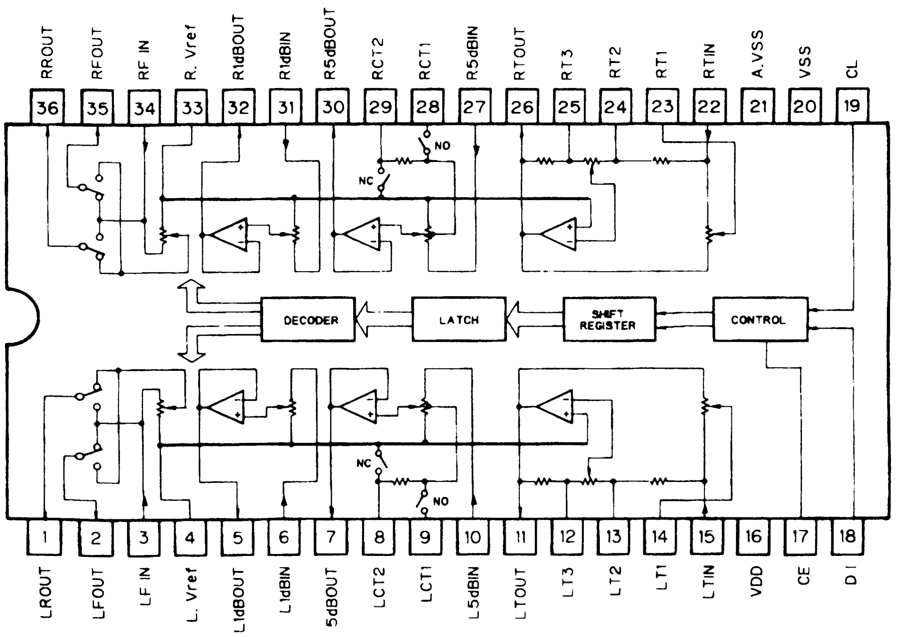
NJM4558L


1
2
3
4
5
6
7
8
A OUT
A-IN
A+IN
V-
B+IN
B-IN
B OUT
V+

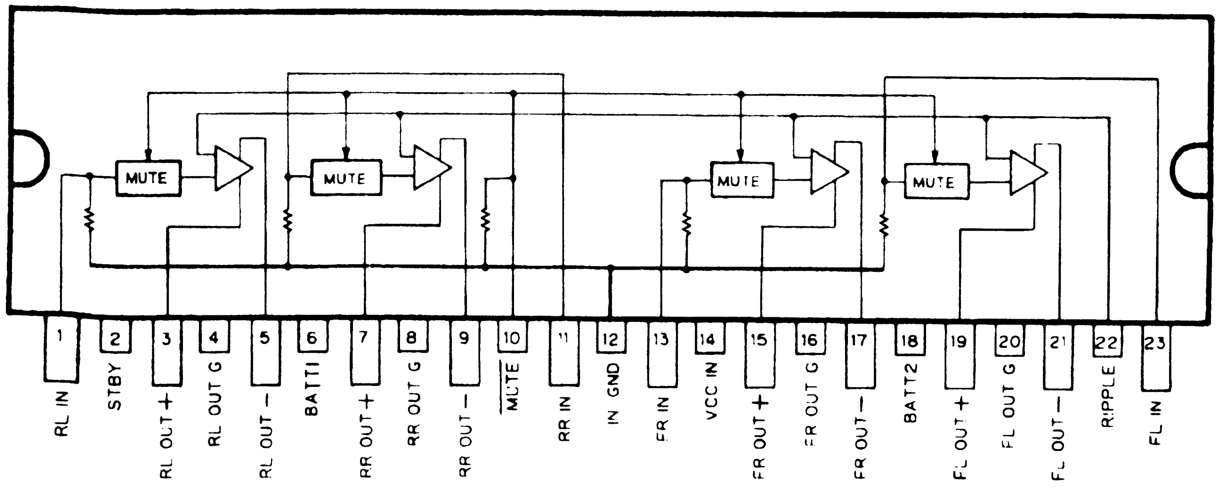
NJM4558MD


VCC
OUT
-IN
+IN
8
7
6
5
1
2
3
4
OUT
-IN
+IN
VEE

*LC7538JMHS


RROUT
RFOUT
RF IN
R. Vref
R1dBOUT
R1dBIN
R5dBOUT
RCT2
RCT1
R5dBIN
RTOUT
RT3
RT2
RT1
RTIN
A.VSS
VSS
CL
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
NO
NC
DECODER
LATCH
SHIFT REGISTER
CONTROL
NC
NO
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
LROUT
LFOUT
LF IN
L. Vref
L1dBOUT
L1dBIN
5dBOUT
LCT2
LCT1
L5dBIN
LTOUT
LT3
LT2
LT1
LTIN
VDD
CE
DI

PA3029A

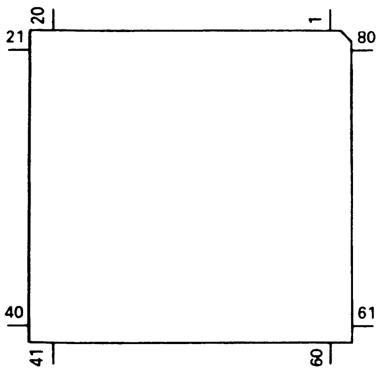

MUTE
MUTE
MUTE
MUTE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
RL IN
STBY
RL OUT +
RL OUT G
RL OUT −
BATT1
RR OUT +
RR OUT G
RR OUT −
MUTE
RR IN
IN GND
FR IN
VCC IN
FR OUT +
FR OUT G
FR OUT −
BATT2
FL OUT +
FL OUT G
FL OUT −
RIPPLE
FL IN

● Pin Functions(PDR009B)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1-3	KD3-KD1	I		Analog key input
4	AVSS	I		A/D coverter GND
5,6	NC			Not used
7	AVREF1	I		D/A converter reference voltage
8	LCE	O		Chip enable output for LCD driver
9	LDT	O	C	Data output for LCD driver
10	$\overline{RST}$	O	C	LSI reset output
11,12	NC			Not used
13	SK	I		SK signal input
14	XA0	O		Control signal distinguishing data from microcomputer
15	$\overline{XSTB}$	O	C	LSI data output
16	XSI	I		LSI data input
17	XSO	O	C	LSI data output
18	$\overline{XSCK}$	O	C	LSI clock output
19	CONT	O	C	Servo driver power supply control
20	LOAD	O	C	Loading motor LOAD control
21	EJET	O	C	Loading motor EJECT control
22	CD5VON	O	C	CD +5V control
23	NC			Not used
24	CDMUTE	O	C	CD mute output
25	$\overline{TMUTE}$	O	C	Tuner mute output
26	VDCONT	O	C	VD control input
27	FOK	I		FOK signal input
28	MIRR	I		Mirror detector input
29	LOCK	I		Spindle lock detector input
30	CLAMP	I		Disc clamp sense input
31	$\overline{HOME}$	I	C	Home position detector input
32	FECNT	O	C	FE output control pin
33	VSS			GND
34	VDSENS	I		VD over voltage sense input
35	VMC	O	C	Loading motor driver power supply
36	NC			Not used
37	$\overline{ADENA}$	O	N	A/D converter reference voltage output
38	NC			Not used
39	CDPW	O	N	CD power control
40	LCK	O		Clock output for LCD driver
41	SYSPW	O	C	System power supply control output
42	BLGTA	O	C	LCD back light amber control output
43	BLGTG	O	C	LCD back light green control output
44	$\overline{SWVDD}$	O	C	Key board unit power supply control output
45	PEE	O	C	Beep tone output
46	VDT	O	C	Data output for electronic volume
47	VST	O	C	Strobe pulse output for electronic volume
48	VCK	O	C	Clock output for electronic volume
49	PCL	O	C	Clock adjustment output
50	FM/$\overline{AM}$	O	C	FM/AM power select output
51	MONO	O	C	Forced mono output
52-55	SIMK0-3	I		Model select input
56	MUTE	O	C	Mute output
57	NC			Not used
58	$\overline{DK}$	I		DK signal input
59	SD	I		SD input
60	$\overline{RESET}$	I		Reset input
61	$\overline{REMIN}$	I		Remote control signal input
62	$\overline{BSENS}$	I		Back up power sense input
63	$\overline{ASENS}$	I		ACC power sense input
64	PDI	I		PLL data input

Pin No.	Pin Name	I/O	Output Format	Function and Operation
65	PDO	O	C	Data output for PLL IC
66	PCK	O	C	Serial clock output for PLL IC
67	PCE	O	C	Chip enable output for PLL IC
68	VDD			Power supply
69,70	X2,X1			Crystal oscillator connection pin
71	IC			Connect to GND
72	XT2			Not used
73	TESTIN	I		Test program start input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0	I		A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		Temperature detector
78	DINC	I		Disc insert sense input
79	EJTD	I		Disc eject position sense input
80	KD0	I		Analog key input

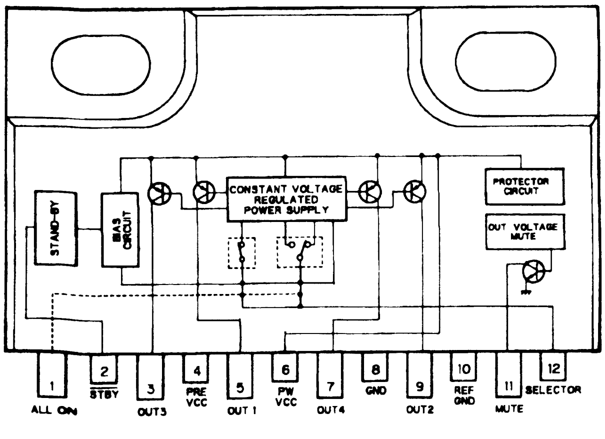
*PDR009B


20
1
21
80
40
61
41
60

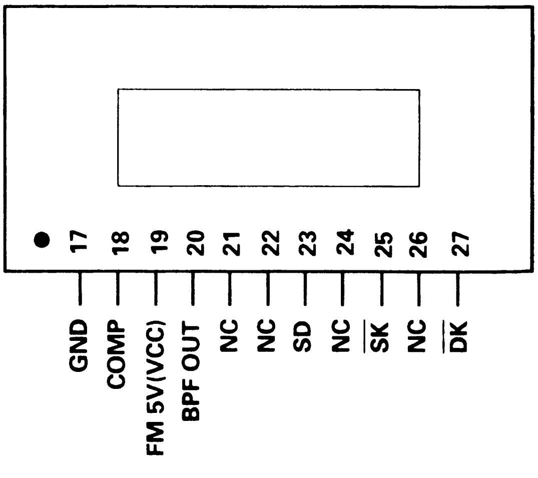
Output Format	Meaning
C	CMOS
N	N channel open drain

IC's marked by are MOS type.*
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

PA2023A


STAND-BY
BIAS CIRCUIT
CONSTANT VOLTAGE REGULATED POWER SUPPLY
PROTECTOR CIRCUIT
OUT VOLTAGE MUTE
1
2
3
4
5
6
7
8
9
10
11
12
ALL ON
STBY
OUT3
PRE VCC
OUT 1
PW VCC
OUT4
GND
OUT2
REF GND
MUTE
SELECTOR

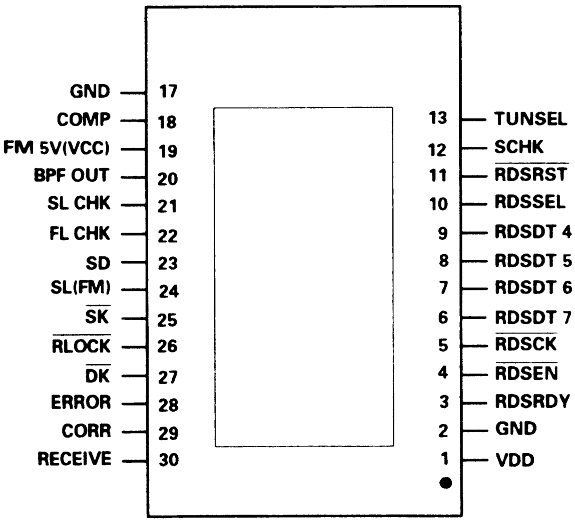
CWV1045


17
18
19
20
21
22
23
24
25
26
27
GND
COMP
FM 5V(VCC)
BPF OUT
NC
NC
SD
NC
SK
NC
DK

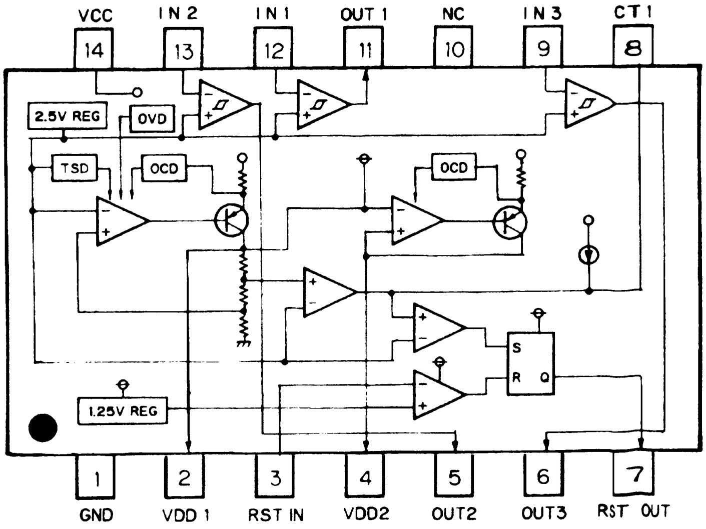
● Pin Functions (CWV1044)

Pin No.	Pin Name	I/O	Function and Operation
1	VDD		Power supply for RDS controller
2	GND		GND
3	RDSRDY	I	Ready input from system control IC
4	$\overline{\text{RDSEN}}$	O	Enable output for system control IC
5	$\overline{\text{RDSCK}}$	I	Serial clock input from system control IC
6-9	RDSDT 7-4	I/O	Data input/output to system control IC
10	RDSSEL	I	Select input from system control IC
11	$\overline{\text{RDSRST}}$	I	Reset input from system control IC
12	SCHK	I	Unit check input
13	TUNSEL	I	FM/AM tuner unit select input
14-16	VACANT		
17	GND		GND
18	COMP	I	FM composite signal input
19	FM 5V(VCC)		Power supply decoder
20	BPF OUT	O	Band pass filter test output
21	SL CHK	O	SL check output
22	FL CHK	O	FL check output
23	SD	I	RDS decode control input
24	SL(FM)	I	Signal level input from tuner
25	$\overline{\text{SK}}$	I	SK signal detect input
26	$\overline{\text{RLOCK}}$	O	RDS test output
27	$\overline{\text{DK}}$	O	DK signal detect output
28	ERROR	O	Disapprove of error correction output
29	CORR	O	Error output
30	RECEIVE	O	RDS synchronizing test output

CWV1044


GND 17
COMP 18
FM 5V(VCC) 19
BPF OUT 20
SL CHK 21
FL CHK 22
SD 23
SL(FM) 24
SK 25
RLOCK 26
DK 27
ERROR 28
CORR 29
RECEIVE 30
13 TUNSEL
12 SCHK
11 RDSRST
10 RDSSEL
9 RDSDT 4
8 RDSDT 5
7 RDSDT 6
6 RDSDT 7
5 RDSCK
4 RDSEN
3 RDSRDY
2 GND
1 VDD

PAJ001A

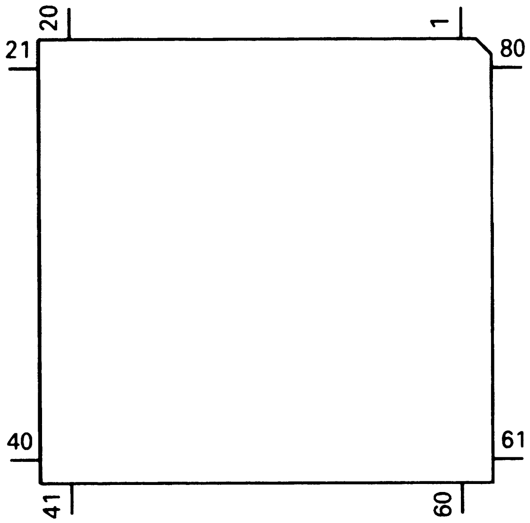

VCC 14
IN 2 13
IN 1 12
OUT 1 11
NC 10
IN 3 9
CT 1 8
2.5V REG
OVD
TSD
OCD
OCD
1.25V REG
S
R
Q
1 GND
2 VDD 1
3 RST IN
4 VDD2
5 OUT2
6 OUT3
7 RST OUT

● Pin Functions(PD4483B)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC	I		Not used
2	$\overline{\text{RDSRST}}$	O	C	Reset output for RDS IC
3	RDSSEL	O	C	Select output for RDS IC
4	AVSS	I		A/D coverter GND
5	$\overline{\text{RDSEN}}$	O	C	Enable output for RDS IC
6	RDSRDY	I		Ready input from RDS IC
7	AVREF1	I		D/A converter reference voltage
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	$\overline{\text{RST}}$	O	C	LSI reset output
11	RDSDI	I		Serial data input for RDS IC
12	RDSDO	O	C	Serial data output for RDS IC
13	$\overline{\text{RDSCK}}$	O	C	Serial clock output for RDS IC
14	XA0	O		Control signal distinguishing data from microcomputer
15	$\overline{\text{XSTB}}$	O	C	LSI strobe output
16	XSI	I		LSI data input
17	XSO	O	C	LSI data output
18	$\overline{\text{XSCK}}$	O	C	LSI clock output
19	CONT	O	C	Servo driver power supply control
20	LOAD	O	C	Loading motor LOAD control
21	EJET	O	C	Loading motor EJECT control
22	CD5VON	O	C	CD +5V control
23	NC			Not used
24	CDMUTE	O	C	CD mute output
25	$\overline{\text{TMUTE}}$	O	C	Tuner mute output
26	VDCONT	O	C	VD control input
27	FOK	I		FOK signal input
28	MIRR	I		Mirror detector input
29	LOCK	I		Spindle lock detector input
30	CLAMP	I		Disc clamp sense input
31	$\overline{\text{HOME}}$	I	C	Home position detector input
32	FECNT	O	C	FE output control pin
33	VSS			GND
34	VDSENS	I		VD over voltage sense input
35	VMC	O	C	Loading motor driver power supply
36	NC			Not used
37	$\overline{\text{ADENA}}$	O	N	A/D converter reference voltage output
38	NC			Not used
39	CDPW	O	N	CD power control
40	NC			Not used
41	SYSPW	O	C	System power supply control output
42	BLGT	O	C	LCD back light control output
43	VLCDPW	O	C	Power supply control output for LCD
44	$\overline{\text{SWVDD}}$	O	C	Key board unit power supply control output
45	PEE	O	C	Beep tone output
46	VDT	O	C	Data output for electronic volume
47	VST	O	C	Strobe pulse output for electronic volume
48	VCK	O	C	Clock output for electronic volume
49	PCL	O	C	Clock adjustment output
50	FM/$\overline{\text{AM}}$	O	C	FM/AM power select output
51	MONO	O	C	Forced mono output
52-55	NC			Not used
56	MUTE	O	C	Mute output
57	NC			Not used
58	NC			Not used
59	SD	I		SD input
60	$\overline{\text{RESET}}$	I		Reset input

Pin No.	Pin Name	I/O	Output Format	Function and Operation
61	NC			Not used
62	$\overline{\text{BSENS}}$	I		Back up power sense input
63	$\overline{\text{ASENS}}$	I		ACC power sense input
64	PDI	I		PLL data input
65	PDO	O	C	Data output for PLL IC
66	PCK	O	C	Serial clock output for PLL IC
67	PCE	O	C	Chip enable output for PLL IC
68	VDD			Power supply
69,70	X2,X1			Crystal oscillator connection pin
71	IC			Connect to GND
72	XT2			Not used
73	TESTIN	I		Test program start input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0	I		A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		Temperature detector
78	DINC	I		Disc insert sense input
79	EJTD	I		Disc eject position sense input
80	DSENS	I		Grille detach sense

*PD4483B

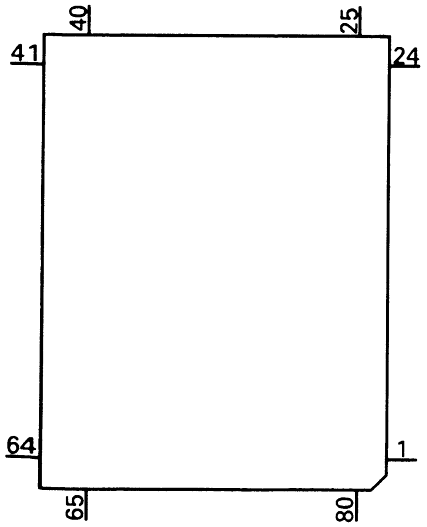


Output Format	Meaning
C	CMOS
N	N channel open drain

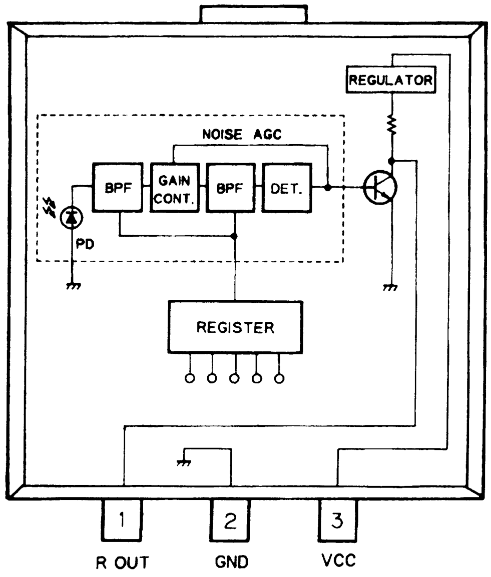
● Pin Functions (PD6122A)

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	X1		Crystal oscillator connection pin
3	X0		Crystal oscillator connection pin
4	RESET	I	Reset Input
5,6	MOD1,0	I	Model select input
7	DILMX	O	Function LED select output
8	KYDT	O	Key data output
9	DPDT	I	Display data input
10	REMIN	I	Remote control pulse input
11	SILMO	O	Illumination color select output
12	SILMG	O	Function LED select output
13–16	$\overline{\text{KD4}}$-$\overline{\text{KD1}}$	I	Key sense input
17–22	$\overline{\text{KDT6}}$-$\overline{\text{1}}$	O	Key strobe output
23	VDD		5V
24–34	NC		Not used
35–73	SEG38–0		LCD segment output
74–77	COM3–0	O	LCD common output
78–80	VLCD–V1		Power supply terminal

*PD6122A


40
25
41
24
64
1
65
80

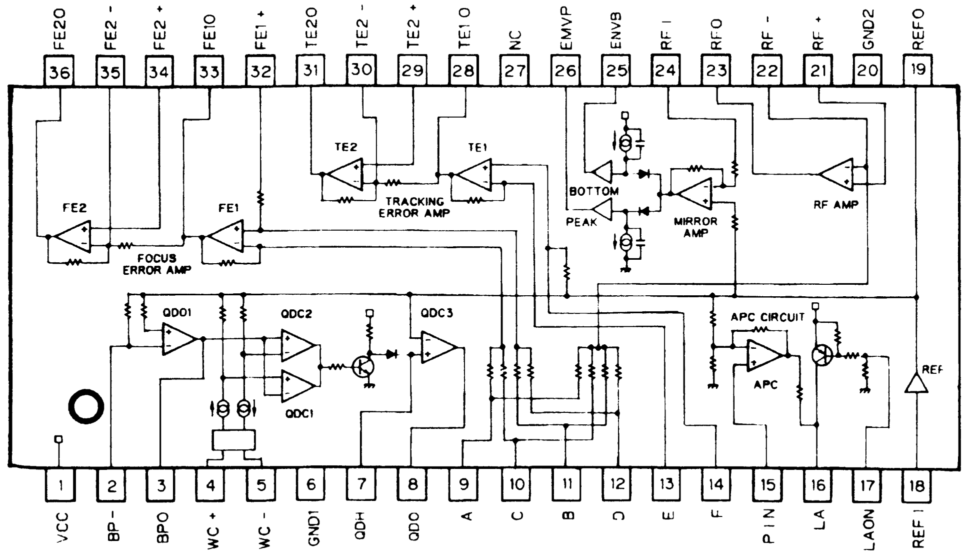
*RPM-678CBR


REGULATOR
NOISE AGC
BPF
GAIN CONT.
BPF
DET.
PD
REGISTER
1
2
3
R OUT
GND
VCC

● Pin Functions(UPC2571GS)

Pin No.	Pin Name	I/O	Function and Operation
1	VCC		VCC
2	BP-	I	TE zero cross amplifier input
3	BPO	O	TE zero cross amplifier output
4	WC+		Not used
5	WC-		Not used
6	GND1		GND
7	QDH		Not used
8	QDO		Not used
9	A	I	A signal input
10	C	I	C signal input
11	B	I	B signal input
12	D	I	D signal input
13	E	I	E signal input
14	F	I	F signal input
15	PIN	I	APC amplifier input
16	LA	O	APC amplifier output
17	LAON		APC amplifier ON/OFF switching
18	REFI	I	Reference voltage input
19	REFO	O	Reference voltage output
20	GND2		GND
21	RF+	I	RF amplifier non-inverting input
22	RF-	I	RF amplifier inverting input
23	RFO	O	RF amplifier output
24	RFI		Not used
25	ENVB		Not used
26	ENBP		Not used
27	NC		Non connection
28	TE1O	O	Tracking error amplifier 1 output
29	TE2+	I	Tracking error amplifier 2 non-inverting input
30	TE2-	I	Tracking error amplifier 2 inverting input
31	TE2O	O	Tracking error amplifier 2 output
32	FE1+	I	Focus error amplifier 1 non-inverting input
33	FE1O	O	Focus error amplifier 1 output
34	FE2+	I	Focus error amplifier 2 non-inverting input
35	FE2-	I	Focus error amplifier 2 inverter input
36	FE2O	O	Focus error amplifier 2 output

UPC2571GS

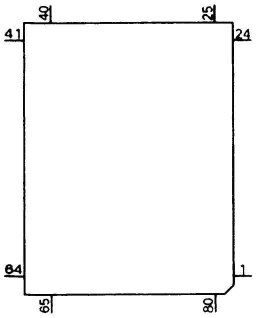

FE2O
FE2 -
FE2 +
FE1O
FE1 +
TE2O
TE2 -
TE2 +
TE1 O
NC
EMVP
ENVB
RF I
RFO
RF -
RF +
GND2
REFO
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
TE2
TE1
TRACKING ERROR AMP
BOTTOM
PEAK
MIRROR AMP
RF AMP
FE2
FE1
FOCUS ERROR AMP
QDO1
QDC2
QDC3
QDC1
APC CIRCUIT
APC
REF
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
VCC
BP-
BPO
WC +
WC -
GND1
QDH
QDO
A
C
B
D
E
F
P I N
LA
LAON
REF I

● Pin Functions(UPD63700GF)

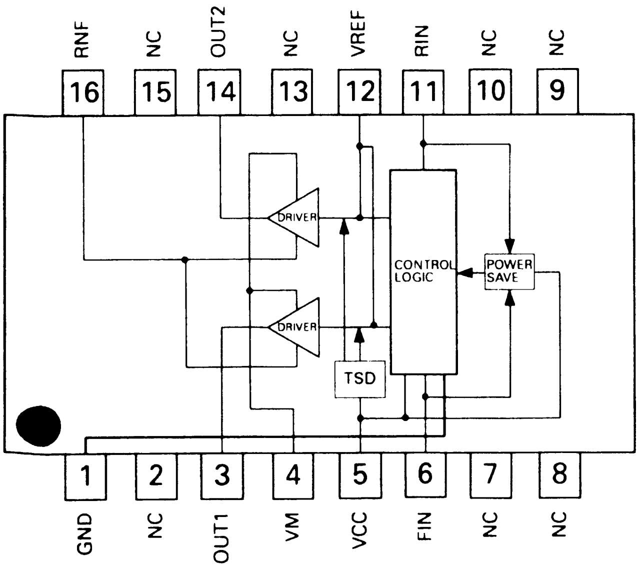
Pin No.	Pin Name	I/O	Function and Operation
1	D.GND		Logic circuit GND
2	RFOK	O	RFOK detection signal output terminal
3	MIRR	O	MIRR detection signal output terminal
4	TBC	I	Tracking filter bank switching terminal
5	HOLD	I	Hold control signal input terminal
6	D.VDD		VDD for logic circuit
7	$\overline{\text{RST}}$	I	System reset
8	AO	I	Control signal distinguishing data from microcomputer
9	$\overline{\text{STB}}$	I	Signal latching serial data inside LSI
10	$\overline{\text{SCK}}$	I	Clock input terminal for serial data input and output
11	SO	O	Serial data and status signal output
12	SI	I	Serial data input
13	TM2	I	Double speed playback control terminal
14	D.GND		Logic circuit GND
15	TEST	I	Test terminal
16	STBY	I	Stand-by input terminal
17	CTLV	I	Control terminal for clock generation VCO used by digital PLL in double speed playback mode
18	POUT	O	Output terminal for phase comparison between EFM signal and bit clock
19	D.GND		Logic circuit GND
20	VCO	I	Inverter input
21	$\overline{\text{VCO}}$	O	Inverter output
22	D.VDD		VDD for logic circuit
23	PLCK	O	Bit clock monitor terminal
24	LOCK	O	"H" when synchronization signal and frame counter output coincide at EFM demodulator
25	WFCK	O	Signal issuring one-frame period by bit clock dividing signal
26	RFCK	O	Oscillation clock divider signal,output pin for signal giving 1-frame sync.
27	C4M	O	Output terminal for signal having four the frequency of LRCK
28	C16M	O	Oscillation clock output terminal
29	D.GND		Logic circuit GND
30	XTAL	I	Oscillation continuation terminal
31	$\overline{\text{XTAL}}$	O	Oscillation continuation terminal
32	D.VDD		VDD for logic circuit
33	SCKO	O	Clock output terminal for audio serial data
34	LRCK	O	Signal distinguishing between left and right channel DOUT terminal output
35	DOUT	O	Serial audio data output terminal
36	TX	O	Digital audio interface data output terminal
37	FLAG	O	Flag signal indicating that the current audio data output of incorrectable data
38	EMPH	O	Emphasis information output
39	WDCK	O	Output terminal for signal having double the frequency of LRCK
40	C2D3	O	Output terminal indicating C2 error correction status
41	SFSY	O	Signal indicating subcode one-frame synchronization
42	SBSY	O	Signal indicating head of subcode block
43	SBSO	O	Subcode data output terminal
44	SBCK	I	Subcode data read clock input terminal
45	D.GND		Logic circuit GND
46,47	C1D1,C1D2	O	Output terminal indicating C1 error correction status
48,49	C2D1,C2D2	O	Output terminal indicating C2 error correction status
50	T4	I	Selects between focus and tracking modulation mode
51	T5	I	Selects motor PWM output mode
52	T6	I	Sets focus PWM output mode
53	T7	I	Sets tracking PWM output mode
54	D.VDD		VDD for logic circuit
55	MRD	O	PWM negative output terminal for the spindle loop filter
56	MFD	O	PWM positive output terminal for the spindle loop filter
57	SRD	O	PWM negative output terminal for the thread loop filter
58	SFD	O	PWM positive output terminal for the thread loop filter

Pin No.	Pin Name	I/O	Function and Operation
59	D.GND		Logic circuit GND
60	TRD	O	PWM negative output terminal for the tracking loop filter
61	TFD	O	PWM positive output terminal for the tracking loop filter
62	FRD	O	PWM negative output terminal for the focus loop filter
63	FFD	O	PWM positive output terminal for the focus loop filter
64	D.VDD		VDD for logic circuit
65	OUTSEL	I	Sets PWM output mode for the motor system
66	TEC1	I	Tracking error input terminal
67	TEC0	I	Tracking error input terminal
68	A.VDD		VDD for analog circuit
69,70	VR2,VR1	I	A/D converter input
71	TE	I	Tracking error input terminal
72	FE	I	Focus error input terminal
73	RFB	I	RFB signal input terminal
74	RFP	I	RFP signal input terminal
75	A.GND		Analog circuit GND
76	REFOUT	O	A/D converter midpoint voltage output terminal inside LSI
77	RFI	I	RF signal input terminal for EFM comparator
78	ASI	I	Level comparing input for RF signal comparison
79	EFM	O	EFM signal output terminal
80	A.VDD		VDD for analog circuit

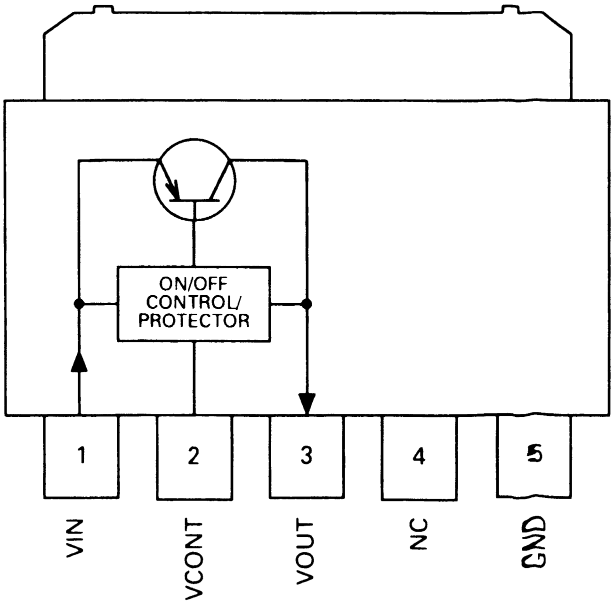
*UPD63700GF


40
25
41
24
64
1
65
80

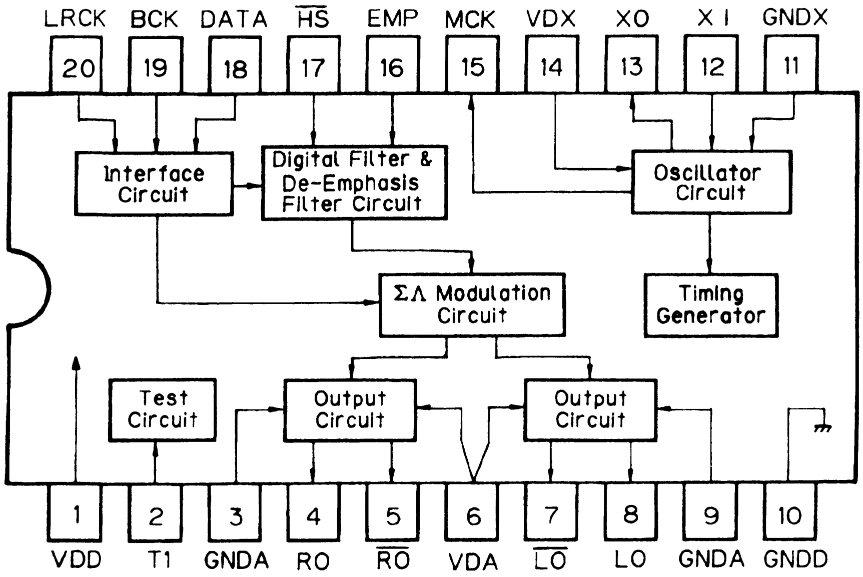
XRA6285FP


RNF
NC
OUT2
NC
VREF
RIN
NC
NC
16
15
14
13
12
11
10
9
DRIVER
DRIVER
CONTROL LOGIC
POWER SAVE
TSD
1
2
3
4
5
6
7
8
GND
NC
OUT1
VM
VCC
FIN
NC
NC

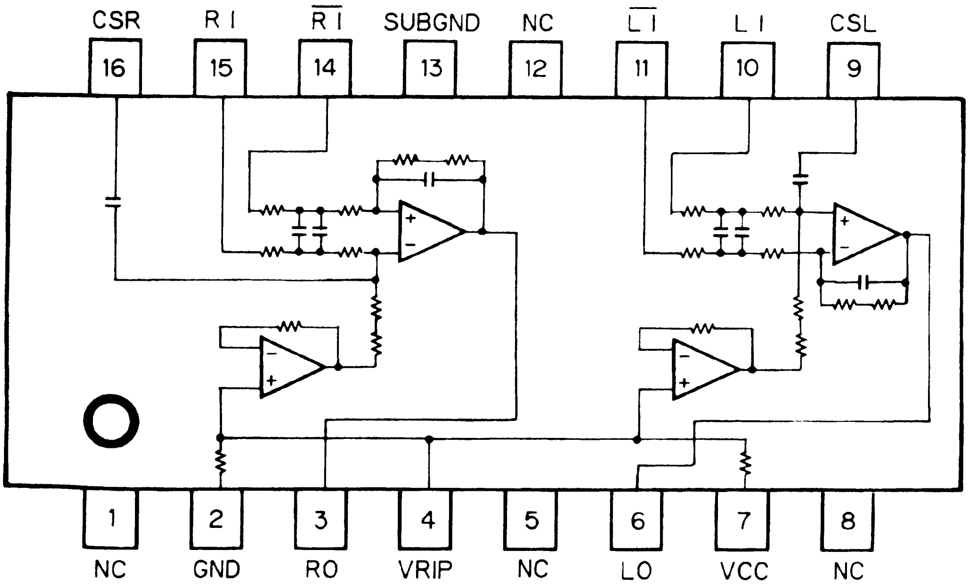
PQ05TZ51


ON/OFF CONTROL/ PROTECTOR
1
2
3
4
5
VIN
VCONT
VOUT
NC
GND

*TC9268F


LRCK
BCK
DATA
$\overline{\text{HS}}$
EMP
MCK
VDX
XO
X I
GNDX
20
19
18
17
16
15
14
13
12
11
Interface Circuit
Digital Filter & De-Emphasis Filter Circuit
Oscillator Circuit
ΣΛ Modulation Circuit
Timing Generator
Test Circuit
Output Circuit
Output Circuit
1
2
3
4
5
6
7
8
9
10
VDD
T1
GNDA
RO
$\overline{\text{RO}}$
VDA
$\overline{\text{LO}}$
LO
GNDA
GNDD

TA2063F


CSR
R I
$\overline{\text{R I}}$
SUBGND
NC
$\overline{\text{L I}}$
L I
CSL
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
NC
GND
RO
VRIP
NC
LO
VCC
NC

4. ADJUSTMENT

4.1 CD PLAYER SECTION

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
  If REFO and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.
  Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
  Since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.
  If by accident REFO comes in contact with GND,immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit s software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- Test mode starting procedure
  Switch ACC,back-up ON while pressing the **4** and **6** keys together.

- Test mode cancellation
  Switch ACC,back-up OFF.

- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently,if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment,the following malfunctions may occur.
  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
  *The unit will not load a disc.
  When the unit malfunctions this way,either re-position the light source,move the unit or cover the photo transistor.

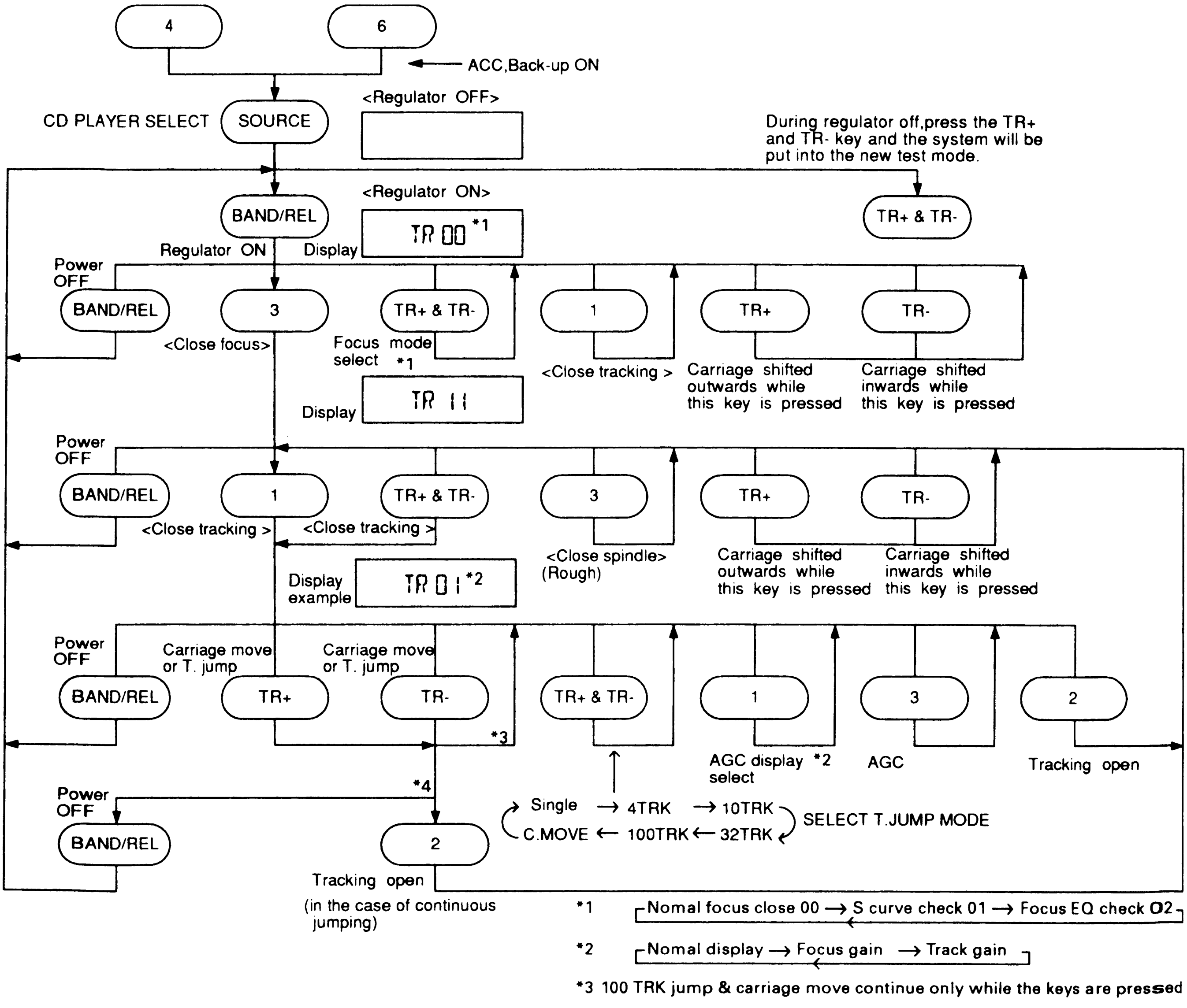
- When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

- Turn power off when pressing the button **TR+** or the button **TR-** key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

- SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

- JUMP MODE resets to SINGLE as soon as power is switched off.

● Flow Chart


4
6
ACC,Back-up ON
CD PLAYER SELECT
SOURCE
<Regulator OFF>
During regulator off,press the TR+ and TR- key and the system will be put into the new test mode.
BAND/REL
<Regulator ON>
TR 00 *1
Regulator ON
Display
TR+ & TR-
Power OFF
BAND/REL
3
TR+ & TR-
1
TR+
TR-
<Close focus>
Focus mode select *1
Display
TR 11
<Close tracking >
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
Power OFF
BAND/REL
1
TR+ & TR-
3
TR+
TR-
<Close tracking >
<Close tracking >
<Close spindle> (Rough)
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
Display example
TR 01 *2
Power OFF
Carriage move or T. jump
Carriage move or T. jump
BAND/REL
TR+
TR-
TR+ & TR-
1
3
2
*3
AGC display select *2
AGC
Tracking open
*4
Power OFF
Single → 4TRK → 10TRK
C.MOVE ← 100TRK ← 32TRK
SELECT T.JUMP MODE
BAND/REL
2
Tracking open
(in the case of continuous jumping)

*1 Nomal focus close 00 → S curve check 01 → Focus EQ check 02

*2 Nomal display → Focus gain → Track gain

*3 100 TRK jump & carriage move continue only while the keys are pressed

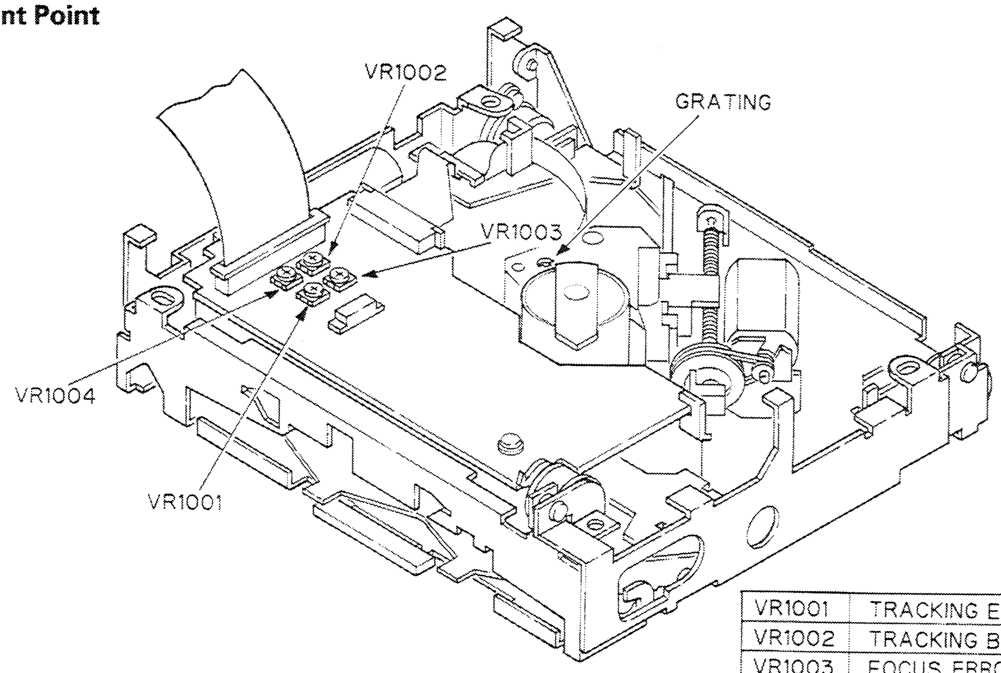
*4 SINGLE/4/10/32 → continuous even after key release

Fig.7

●Measuring Equipment and Jigs

Adjustment	Measuring equipment & jigs
1 Tracking Error Offset Adjustment 1	DC V Meter
2 Grating Check / Adjustment 1	Oscilloscope, ABEX TCD-784, L.P.F., Clock Driver
3 Grating Adjustment 2	Oscilloscope, Grating Adjustment Filter (B.P.F.), mV Meter, ABEX TCD-784, L.P.F., Clock Driver
4 Tracking Balance Adjustment 1	Oscilloscope, Low-pass Filter, ABEX TCD-784
5 Focus Bias Adjustment	Oscilloscope, ABEX TCD-784
6 RFO Offset Adjustment	Oscilloscope, ABEX TCD-784
7 Tracking Error Offset Adjustment 2	DC V Meter
8 Tracking Balance Adjustment 2	Oscilloscope, Low-pass Filter, ABEX TCD-784

Adjustment Point


VR1002
GRATING
VR1003
VR1004
VR1001

VR1001	TRACKING ERROR OFFSET
VR1002	TRACKING BALANCE
VR1003	FOCUS ERROR BIAS
VR1004	RFO OFFSET

Fig.8

Test Point

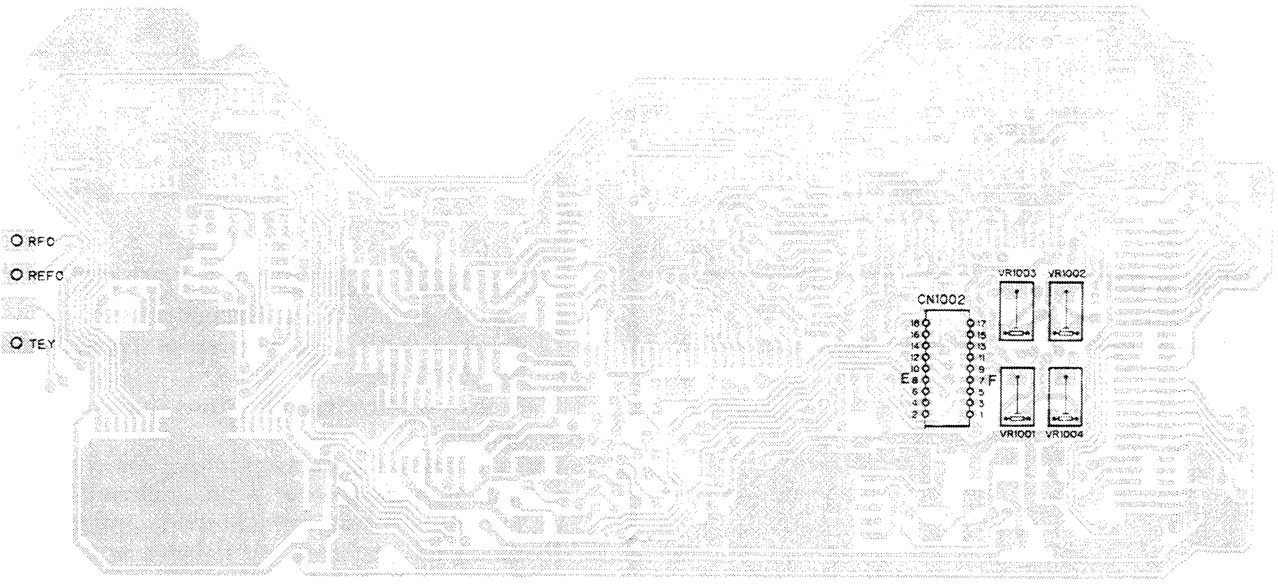

RFO
REFO
TEY
CN1002
E
F
VR1003
VR1002
VR1001
VR1004

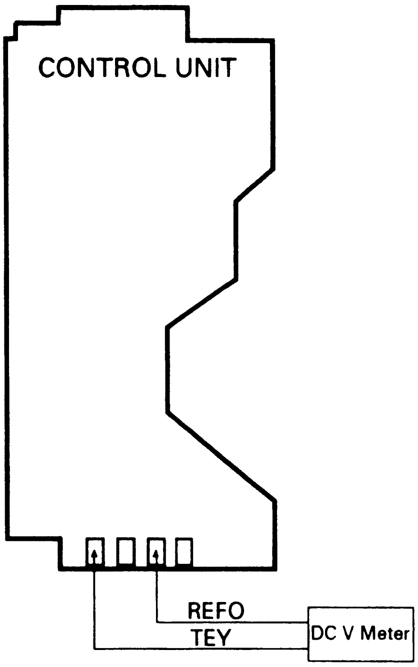
Fig.9

1 Tracking Error Offset Adjustment 1

·**Purpose** :
To adjust the offset of the tracking pre-amp to zero

·**Symptoms of Mal-adjustment** :
Track search NG, Carriage runaway, Poor playability

·**Measuring Equipment / Jig**	·DC V Meter
·**Measuring Point**	·TEY
·**Test Disc , Mode**	·No disc, TEST MODE
·**Adjustment Point**	·VR1001(TE OFFSET VR)

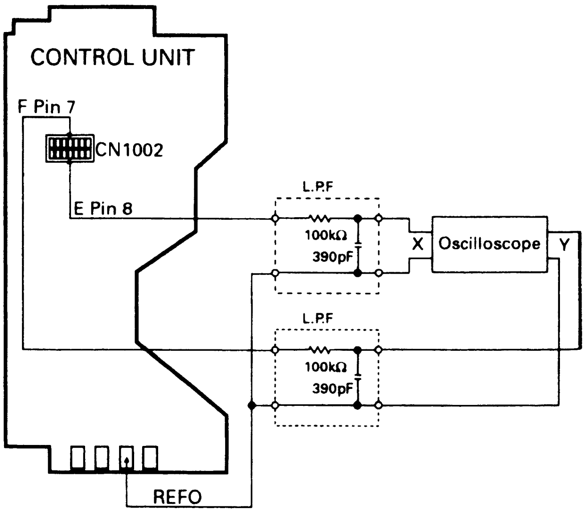


Adjustment Procedure
1.Switch the regulator on.
2.Using VR1001, adjust TEY to 0 ± 25mV w.r.t. REFO.

2 Grating Check / Adjustment 1

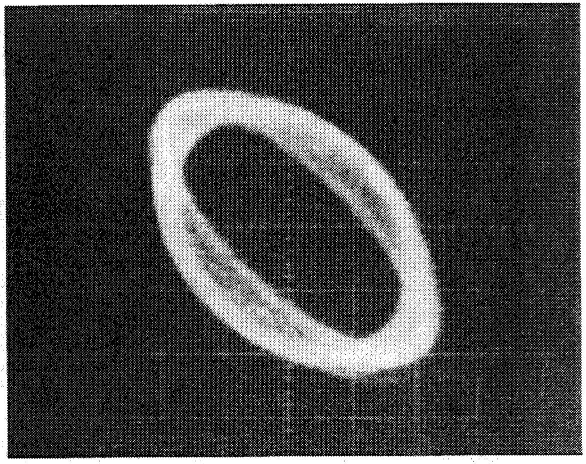
·**Purpose** :
To check that the PU grating is correctly aligned after the PU unit has been replaced
·**Symptoms of Mal-adjustment** :
Unable to play disc, track skip during search, search NG

·**Measuring Equipment / Jig**	·Oscilloscope, L.P.F., Clock Driver
·**Measuring Point**	·E, F
·**Test Disc , Mode**	·ABEX TCD-784, TEST MODE
·**Adjustment Point**	·Grating hole



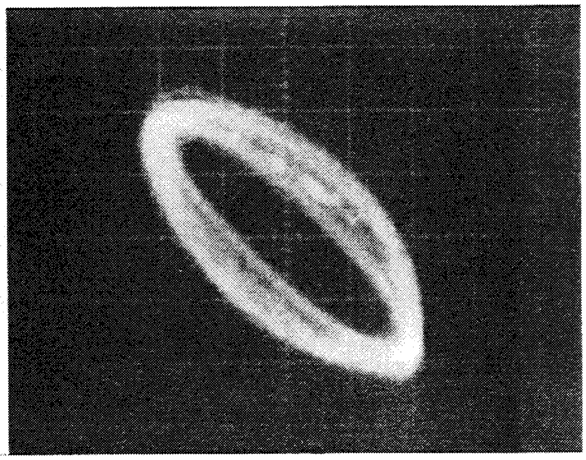
Adjustment Procedure
1.Load disc and switch regulator on.
2.Position the PU in the center of the disc using the **TR+** & **TR-** keys.
3.Press key **3** to close focus and once more to close spindle.
4.Refering to the photographs given check that the grating is within ±45°. If not, it should be possible to make a fine adjustment to the grating by **slowly** tuning the grating screw. If, however during the adjustment the lissajous figure is seen to "FLIP" then the null point must be found and the adjustment made from there(see next section).

Lissajous figure (AC input)
Horizontal axis E 10mV/div.
Vertical axis F 10mV/div.



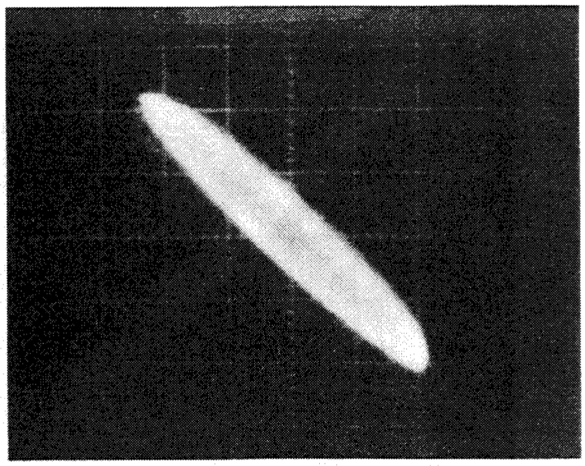
60°=NG

Waveform 1



45°=OK
(Limit)

Waveform 2



0°=BEST
(Doesn't become
a single line due
to eccentricity)

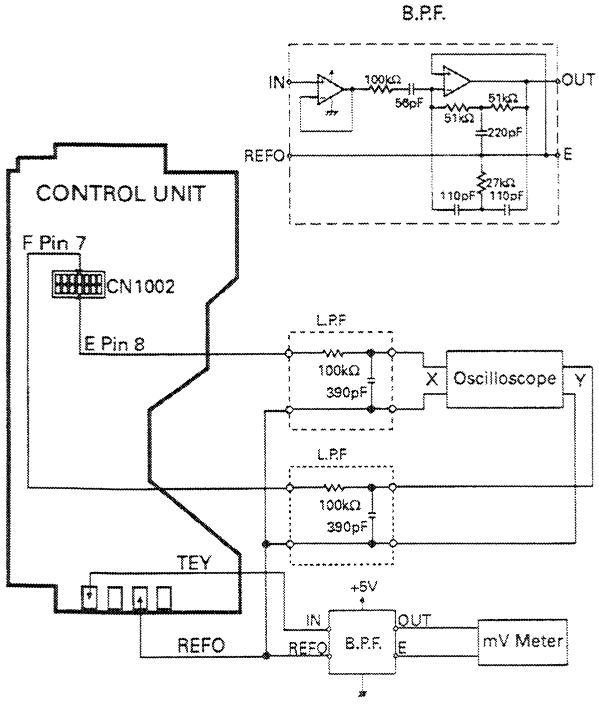
Waveform 3

3 Grating Adjustment 2

· Purpose :
This needs to be done if the previous adjustment was unsuccessful

· Symptoms of Mal-adjustment :
Unable to play disc, track skipping, track search NG

· Measuring Equipment / Jig	· Oscilloscope, Grating Adjustment filter (BPF), mV Meter, L.P.F., Clock Driver
· Measuring Point	· TEY, E, F
· Test Disc , Mode	· ABEX TCD-784, TEST MODE
· Adjustment Point	· Grating hole

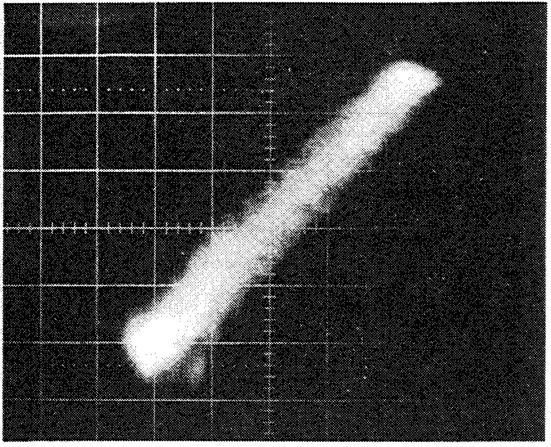

B.P.F.
IN
OUT
100kΩ
56pF
51kΩ
51kΩ
220pF
REFO
E
27kΩ
110pF
110pF
CONTROL UNIT
F Pin 7
CN1002
E Pin 8
L.P.F
100kΩ
390pF
X
Oscilloscope
Y
L.P.F
100kΩ
390pF
TEY
+5V
IN
OUT
B.P.F.
REFO
E
REFO
mV Meter

Adjustment Procedure

1. Load disc and switch regulator on.
2. Position PU unit in the center of the disc using the **TR+** & **TR-** keys.
3. Press key **3** to close focus and press once more to close spindle.
4. While monitoring the output of the BPF connected to TEY, slowly turn the grating screw. The output voltage should pass through many minimums; search for the minimum which is clearly smaller than the rest - this is the "null point", where the E & F sub-beams are lined up with the tracks on the disc.
5. From this null point, turn the grating screw clockwise (as seen from the underside of the PU unit) until the lissajous waveform is a single line (or close as possible) as shown in the photograph.

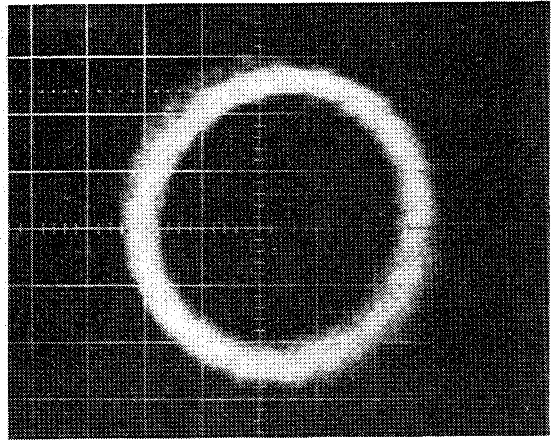
Null Point=180°

Lissajous figure (AC input)
Horizontal axis E 10mV/div.
Vertical axis F 10mV/div.



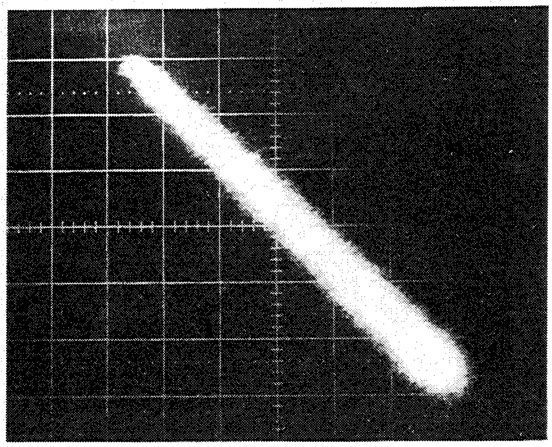
Waveform 4

"Rough" adjustment=90°



Waveform 5

Final adjustment=0°



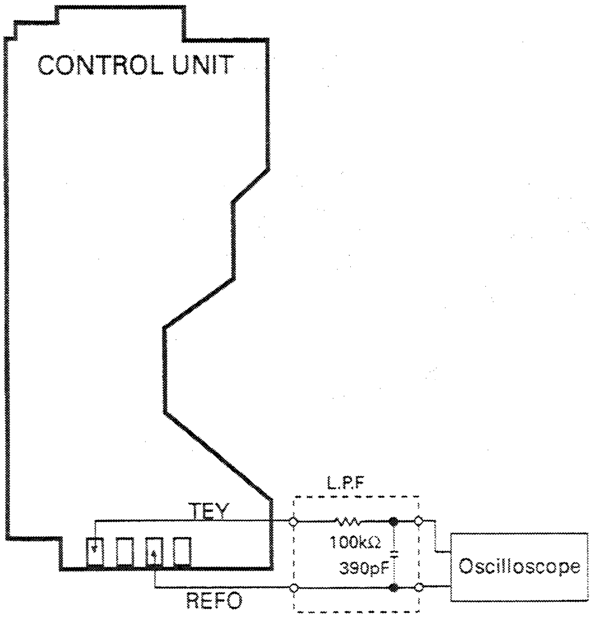
Waveform 6

4 Tracking Balance Adjustment 1

· **Purpose :**
To equate the sensitivity of the F channel to that of the E channel

· **Symptoms of Mal-adjustment :**
Track search NG, Poor playability carriage runaway

· **Measuring Equipment / Jig**	· Oscilloscope, L.P.F.
· **Measuring Point**	· TEY
· **Test Disc , Mode**	· ABEX TCD-784, TEST MODE
· **Adjustment Point**	· VR1002 (T.BAL VR)



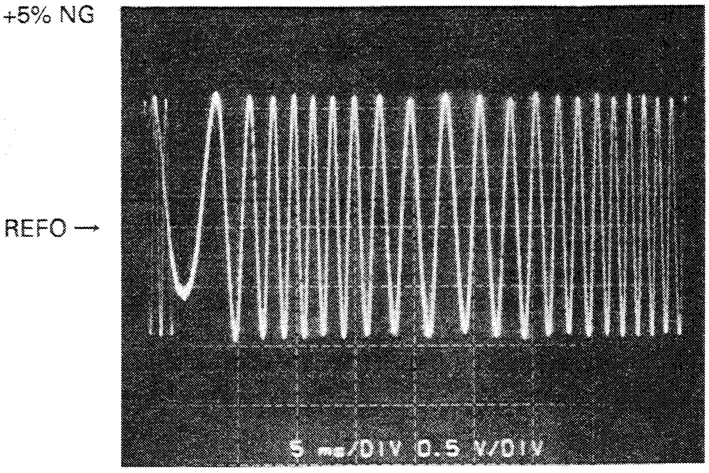
Adjustment Procedure

1. Load Disc and switch the regulator on.
2. Position the PU unit in the center of the disc using the **TR+** & **TR-** keys.
3. Close focus by pressing key **3.**
4. Observing the TEY waveform on the oscilloscope, adjust VR1002 until the positive and negative halves have the same amplitude (see waveform 7–9).

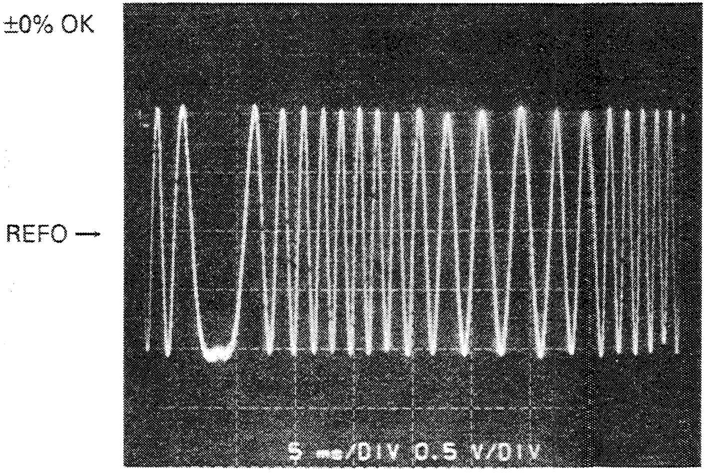
Check

After adjustment the TEY waveform should have an amplitude of 1.5±0.65 Vpp (ABEX-784)
(Providing focus bias is OK)

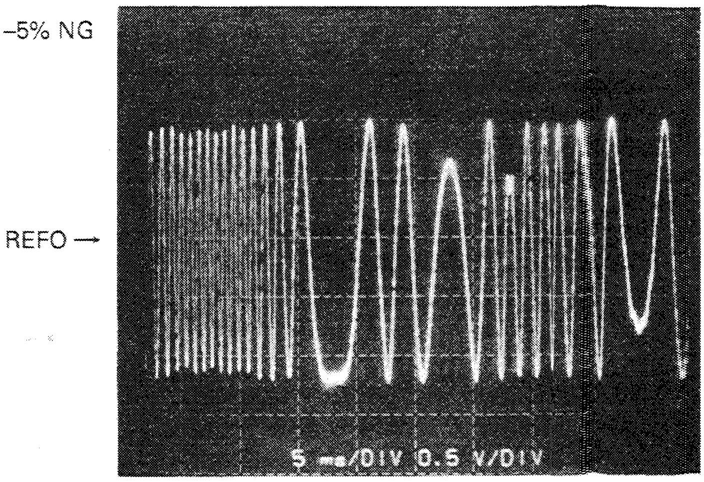
DC Mode
0.5V/div.
5ms/div.



Waveform 7



Waveform 8



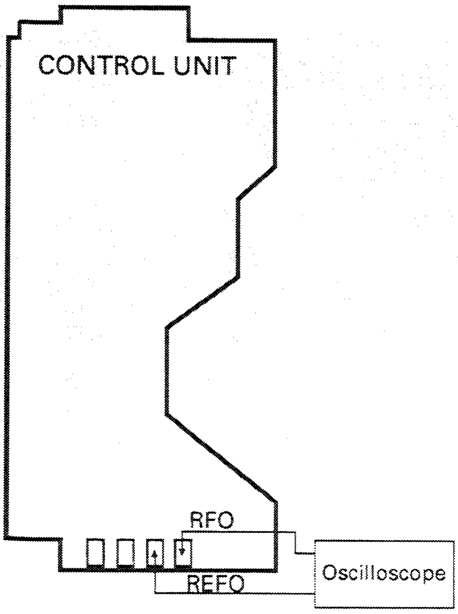
Waveform 9

5 Focus Bias Adjustment

·Purpose :
To adjust the focus servo reference so that the RF waveform is an optimum.

·Symptoms of Mal-adjustment :
Difficulty in closing focus, poor playability.

·Measuring Equipment / Jig	·Oscilloscope
·Measuring Point	·RFO
·Test Disc , Mode	·ABEX TCD-784, NORMAL MODE
·Adjustment Point	·VR1003 (FE BIAS VR)

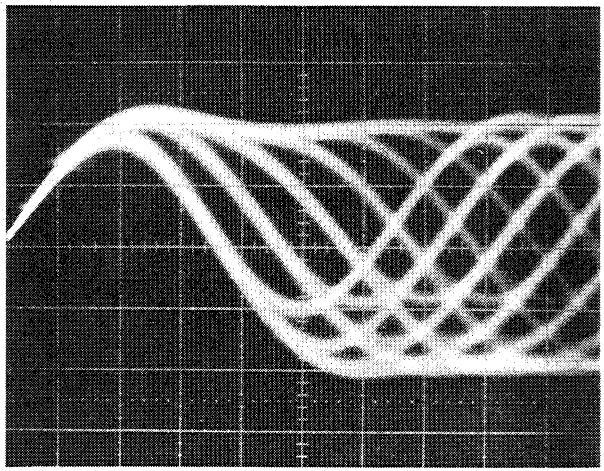


Adjustment Procedure

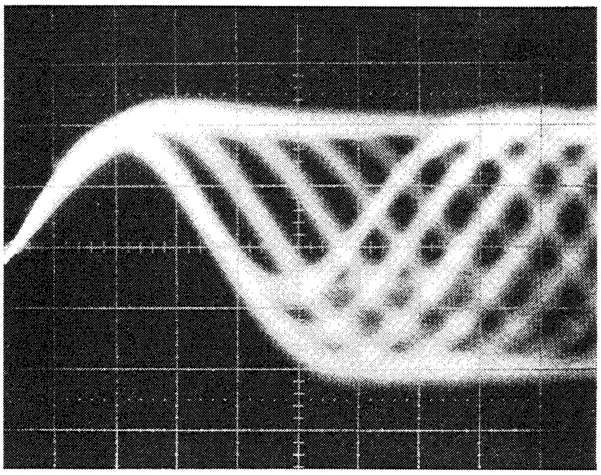
1) Play track number 18.
2) Adjust VR1003 so that the RFO waveform amplitude is a maximum and eye pattern is optimum.

Check

After adjustment the RFO waveform should have an amplitude of 1.7±0.65 Vpp (ABEX-784)


OK

Waveform 10


NG

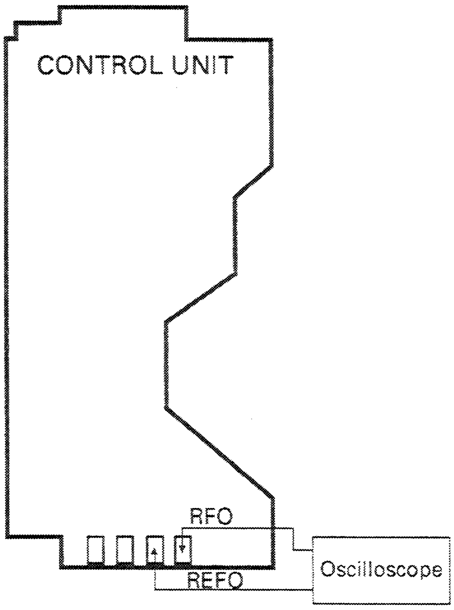
AC Mode Before adjustment Waveform 11

6 RFO Offset Adjustment

·Purpose
To adjust the RFO waveform offset to an optimum.

·Symptoms of Mal-adjustment
Difficulty in closing focus, poor playability.

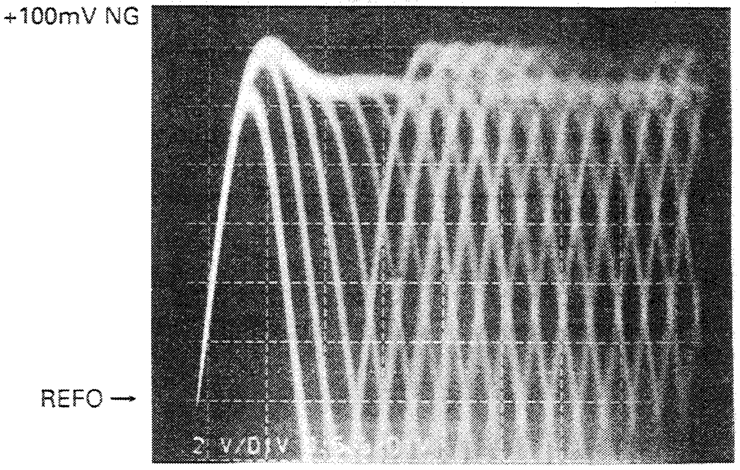
·Measuring Equipment / Jig	·Oscilloscope
·Measuring Point	·RFO
·Test Disc , Mode	·ABEX TCD-784, NORMAL MODE
·Adjustment Point	·VR1004 (RFO OFFSET VR)



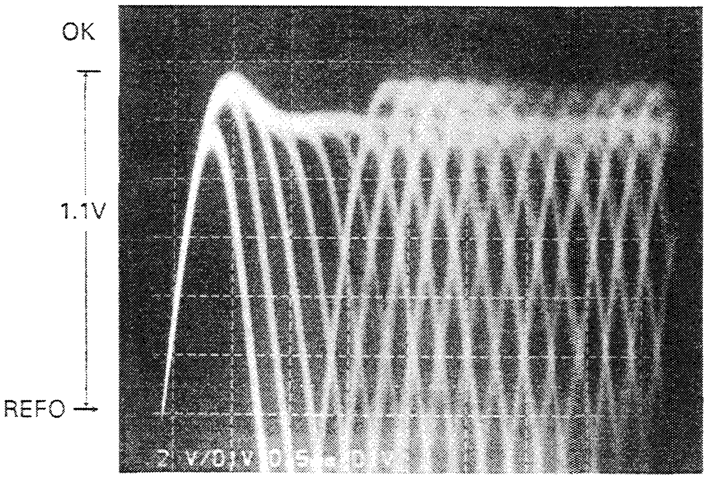
Adjustment Procedure

1) Play track number 18.
2) Adjust VR1004 so that the peak value of the upper envelope of the RFO waveform is at +1.1VDC w.r.t. REFO.(See waveform 12–14)

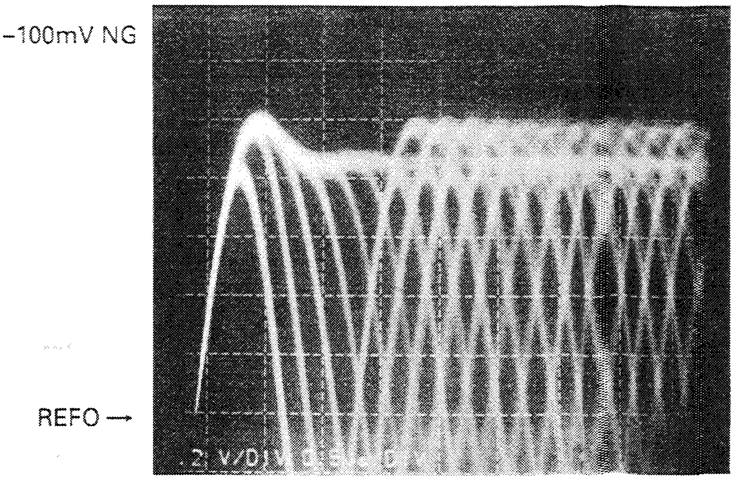
DC Mode
0.2V/div.
0.5µs/div.



Waveform 12



Waveform 13

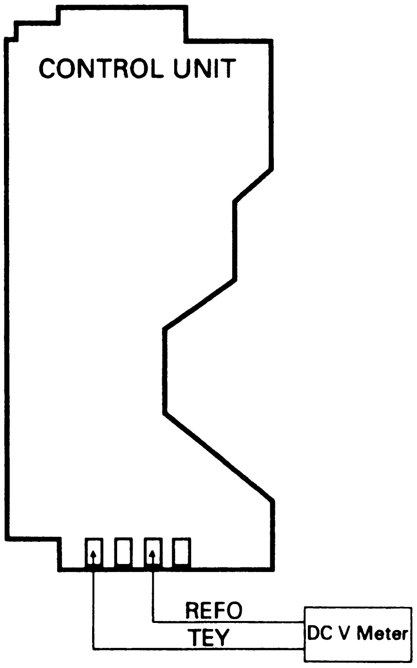


Waveform 14

7 Tracking Error Offset Adjustment 2

·**Purpose** :
To check the offset of the tracking pre-amp is zero and adjust if necessary.
·**Symptoms of Mal-adjustment** :
Track search NG, Carriage runaway, Poor playability

·**Measuring Equipment / Jig**	·DC V Meter
·**Measuring Point**	·TEY
·**Test Disc , Mode**	·No disc, TEST MODE
·**Adjustment Point**	·VR1001(TE OFFSET VR)

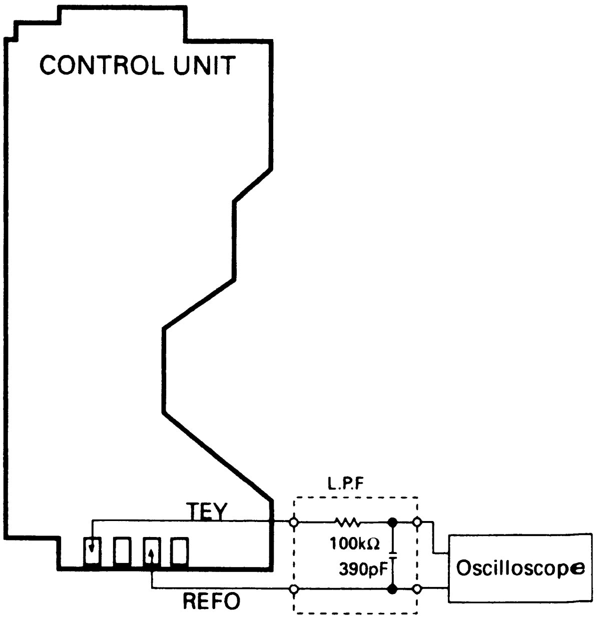


Adjustment Procedure
1.Switch the regulator on.
2.Using VR1001, adjust TEY to 0 ± 25mV w.r.t. REFO.

8 Tracking Balance Adjustment 2

·**Purpose** :
To equate the sensitivity of the F channel to that of the E channel.This needs only be done if the TE OFFSET volume was re-adjusted in the previous step
·**Symptoms of Mal-adjustment:**
Track search NG,Poor playability, carriage runaway

·**Measuring Equipment / Jig**	·Oscilloscope, L.P.F.
·**Measuring Point**	·TEY
·**Test Disc , Mode**	·ABEX TCD-784, TEST MODE
·**Adjustment Point**	·VR1002 (T.BAL VR)



Adjustment Procedure
1.Load Disc and switch the regulator on.
2.Position the PU unit in the center of the disc using the **TR+** & **TR-** keys.
3.Close focus by pressing key **3**.
4.Observing the TEY waveform on the oscilloscope, adjust VR1002 until the positive and negative halves have the same amplitude (See waveform 7–9).

Check
After adjustment the TEY waveform should have an amplitude of 1.5±0.65 Vpp (ABEX-784)

4.2 TUNER SECTION

● Connection Diagram

NOTE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

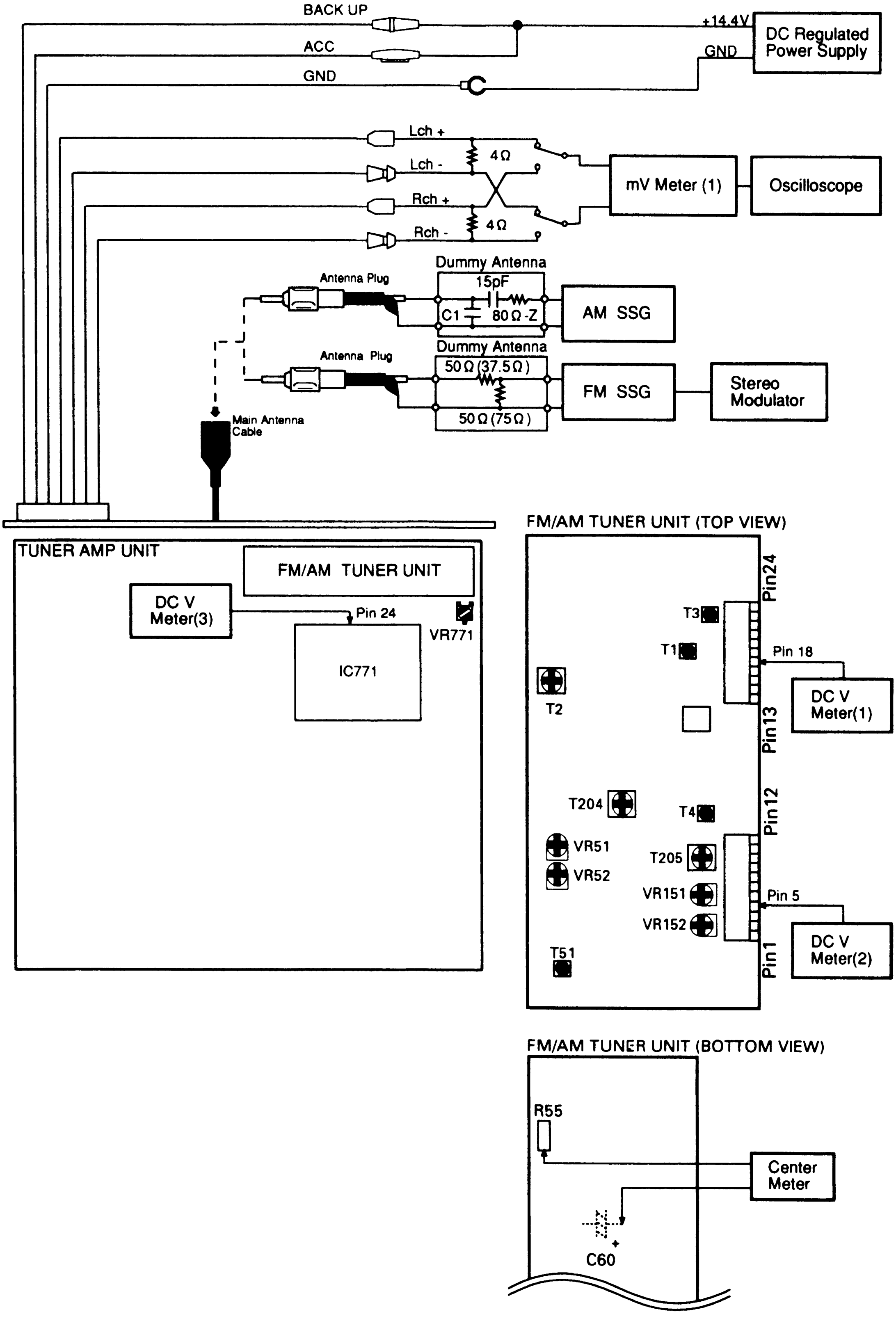

BACK UP
ACC
GND
+14.4V
GND
DC Regulated Power Supply
Lch +
Lch -
Rch +
Rch -
4Ω
4Ω
mV Meter (1)
Oscilloscope
Dummy Antenna
15pF
C1
80Ω-Z
AM SSG
Antenna Plug
Antenna Plug
Dummy Antenna
50Ω(37.5Ω)
50Ω(75Ω)
FM SSG
Stereo Modulator
Main Antenna Cable
TUNER AMP UNIT
FM/AM TUNER UNIT
DC V Meter(3)
Pin 24
VR771
IC771
FM/AM TUNER UNIT (TOP VIEW)
Pin24
T3
T1
Pin 18
DC V Meter(1)
T2
Pin13
Pin12
T204
T4
VR51
VR52
T205
VR151
VR152
Pin 5
DC V Meter(2)
T51
Pin1
FM/AM TUNER UNIT (BOTTOM VIEW)
R55
Center Meter
C60
+

Fig.10

MW/LW ADJUSTMENT

	No.	AM SSG(400Hz,30%) Frequency(kHz)	Level(dBµV)	Displayed Frequency(kHz)	Adjustment Point	Adjustment Method (Switch Position)
IF	1	999	20	999	T204,T205,	mV Meter(1) : Maximum

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 100%(75kHz Dev.)
S:STEREO MOD., 1kHz, L or R=90%, Pilot=10%(67.5kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG Frequency(MHz)	Level(dBf)	Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
TUN Volt	1	108.0 M	65	108.0	T4	DC V Meter(1) : 6.5V±0.1V
IF	1	98.1 M	65	98.1	T51	Center Meter:0
ANT,RF	1	98.1 M	10	98.1	T1,T3	mV Meter(1) : Maximum
IFT	1	98.1 M	10	98.1	T2	mV Meter(1) : Maximum (STEREO MODE)
Soft Mute	1	98.1 M	65	98.1		mV Meter(1) : A (STEREO MODE)
	2	98.1 M	15	98.1	VR52	mV Meter(1) : A-3dB
MPX	1	98.1 S	65	98.1	VR152	mV Meter(1) : Separation Maximum
ARC	1	98.1 S	40	98.1	VR151	mV Meter(1) : Separation 5dB
SD	1	98.1 S	22	98.1	VR51	DC V Meter(2) : Approx. 5V (SEEK:ON)

FM SL ADJUSTMENT(DEH-605RDS)

Modulation MONO MOD., 400Hz 100%(75kHz Dev.)

No.	FM SSG Frequency(MHz)	Level(dBf)	Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
1	106.1	52	106.1	VR771	DC V Meter(3) : 2.25V±0.05V

5. ERROR NUMBERS AND NEW TEST MODE

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.

This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

·With ERROR indicated in "MODE" on IP-BUS Display date, an error code is transmitted by the use of MIN and SEC. The MIN and SEC data will be identical.

·Examples of Display E-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

"defects" means scratches, dirt etc an the surface of the disc.

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disk number)

During the setup,the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 1-24.

(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BAND/REL	Regulator ON	Regulator OFF	—	Time of occurrence/ cause of error select
TR+	—	FWD-Kick	TR+	—
TR-	—	REV-Kick	TR-	—
1	—	Tracking close	PAUSE	—
2	—	Tracking open	REPEAT	—
3	—	Focus close	RANDOM	—
TR+ & TR-	To New Test Mode	Focus Mode Select	AUTO/MANU	TRACK No./ time of occurrence select

Operations,such as EJECT, CD ON/OFF, etc. are performed normally

(3) Error Cause (Error Number) Code

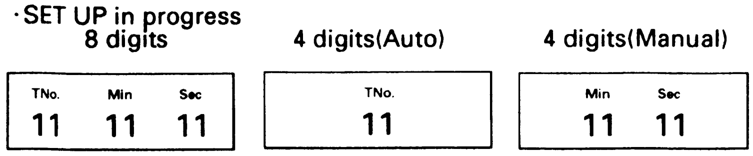
Error Code	Classification	Mode	Description	Cause/Detail	
40	ELECTRIC	PLAY	FOK=L	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 150ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15,16,17	Focus closed,Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR ,LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, failed to read subcode

(5) Example of Display.

- SET UP in progress



8 digits

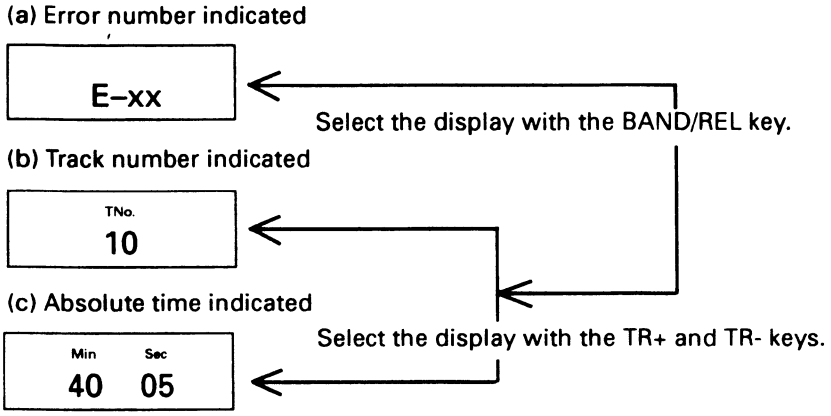
4 digits(Auto)

4 digits(Manual)

TNo.
Min
Sec
11 11 11
TNo.
11
Min
Sec
11 11

- Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

- Protection/Error upon occurrence(4 digits display)



(a) Error number indicated

(b) Track number indicated

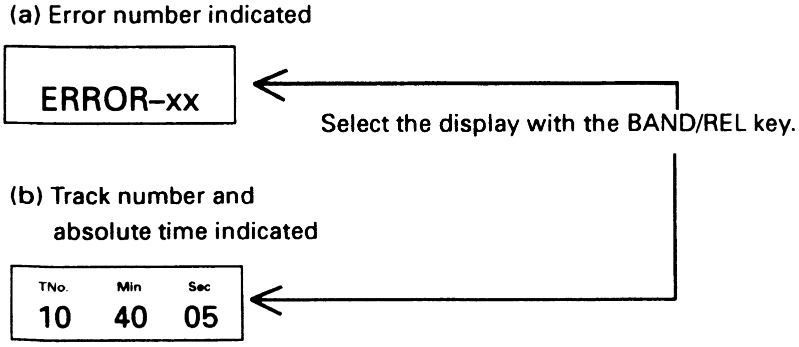
(c) Absolute time indicated

Select the display with the BAND/REL key.

Select the display with the TR+ and TR- keys.

E–xx
TNo.
10
Min
Sec
40 05

- Protection/Error upon occurrence(8 digits display)



(a) Error number indicated

(b) Track number and absolute time indicated

Select the display with the BAND/REL key.

ERROR–xx
TNo.
Min
Sec
10 40 05

6. EXPLODED VIEW PARTS LIST

● Chassis(Exploded View:Page 2-9)

NOTES:

- Parts marked by "✱"are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by "◉"are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

● Parts List(DEH-605RDS)

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ26P080FMC
	3	Screw	PSS26P060FZK
	4	Screw	BSZ30P060FMC
	5	Screw	BSZ30P120FMC
	6	Cord Assy	CDE4142
	7	Cap	CNS1472
	8	Resistor	RS1/2P102JL
	9	Screw	CBA1284
	10	Handle	CNC4947
	11	Bush	CNV1009
	12	Case	CNB1817
	13	Holder	CNC3850
	14	Holder	CNC4946
	15	Insulator	CNM3726
	16	P.C.Board	CNP3534
	17	Case	CNS2269
	18	Cushion	CNM3074
	19	Cap	CNV2680
	20	Holder	CNV3620
	21	Chassis Unit	CXA5925
	22	CD Mechanism Module	CXK2810
	23	Tuner Amp Unit	CWX1648
	24	Screw	BSZ26P120FMC
	25	Cord	CDE4136
	26	Antenna Cable	CDH1146
	27	Plug(CN951)	CKM1139
	28	Plug(CN851)	CKS1238
	29	Connector(CN601)	CKS1529
	30	Connector(CN651)	CKS1546
	31	Holder	CNC4881
	32	Holder	CNC4882
	33	Bracket	CNC4940
	34	Holder	CNC5013
	35	Bracket	CNC5015
	36	Insulator	CNM3825
	37	Heat Sink	CNR1307
	38	Spacer	CNM3343
	39	IC(IC551)	PA3029A
	40	Screw	BSZ30P060FMC
	41	Bracket	CNC5014
	42	FM/AM Tuner Unit	CWE1313
	43	Antenna Jack	CKX1043
	44	Holder	CNC4880
	45	Detach Grille Assy	CXA5860
	46	Screw	BUZ20P100FZK
	47	Button	CAC4040
	48	Button	CAC4041
	49	Button	CAC4042
	50	Button	CAC3741
	51	Button	CAC3742
	52	Button	CAC4039
	53	Button	CAC3744
	54	Grille	CNS2817
	55	Cover	CNS2818
	56	Key Board Unit	CWX1661
	57	LCD	CAW1228
	58	Holder	CNC5009
	59	Lens	CNV3671
	60	Rubber	CNV3672
	61	Connector	CNV3673
	62	Rubber	CNV3675
	63	Spacer	CNM4042
	64	Plug	CKS2402
	65	Panel Assy	CXA5875
	66	Screw	BPZ20P060FMC
	67	Spring	CBH1484
	68	Socket	CKS2782
	69	Holder	CNC4943
	70	Holder	CNC4944
	71	P.C.Board	CNP3532
	72	Arm	CNV3696
	73	Arm	CNV3697
	74	Panel Unit	CXA5913
	75	Screw	PMS20P030FZK
	76	Detach Mechanism Unit	CXA5188
	77	Washer	CBF1039
	78	Spring	CBH1484
	79	Arm	CNV3292
	80	Arm	CNV3293
	81	Holder Unit	CXA5124
	82	IC(IC971)	PA2023A
	83-90	·····	

- **The DEH-505SDK, DEH-505, DEH-405SDK and DEH-405 Parts Lists enumerate the parts which differ from those enumerated in the DEH-605RDS Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-605RDS Parts List is given on page 1-38.**

Mark No.	Description	DEH-605RDS	DEH-505SDK	DEH-505	DEH-405SDK	DEH-405
6	Cord Assy	CDE4142	CDE4141	CDE4142	CDE4141	CDE4142
19	Cap	CNV2680	·····	·····	CNV2680	CNV2680
21	Chassis Unit	CXA5925	CXA5933	CXA5934	CXA5935	CXA5934
23	Tuner Amp Unit	CWX1648	CWX1649	CWX1651	CWX1650	CWX1652
25	Cord	CDE4136	·····	·····	CDE4136	CDE4136
28	Plug(CN851)	CKS1238	·····	·····	CKS1238	CKS1238
29	Connector(CN601)	CKS1529	CKS1534	CKS1534	CKS1534	CKS1534
31	Holder	CNC4881	CNC4881	·····	CNC4881	·····
32	Holder	CNC4882	CNC4882	·····	CNC4882	·····
35	Bracket	CNC5015	CNC5016	CNC5016	CNC5015	CNC5015
36	Insulator	CNM3825	CNM3825	·····	CNM3825	·····
42	FM/AM Tuner Unit	CWE1313	CWE1311	CWE1311	CWE1311	CWE1311
45	Detach Grille Assy	CXA5860	CXA5861	CXA5866	CXA5865	CXA5867
52	Button	CAC4039	·····	·····	·····	·····
54	Grille	CNS2817	·····	·····	CNS2835	CNS2837
	Grille Unit	·····	CXA5921	CXA5922	·····	·····
56	Key Board Unit	CWX1661	CWX1662	CWX1662	CWX1664	CWX1664
57	LCD	CAW1228	CAW1229	CAW1229	CAW1229	CAW1229
58	Holder	CNC5009	CNC5010	CNC5010	CNC5010	CNC5010
65	Panel Assy	CXA5875	CXA5876	CXA5876	CXA5876	CXA5876
68	Socket	CKS2782	CKS2783	CKS2783	CKS2783	CKS2783
71	P.C.Board	CNP3532	CNP3526	CNP3526	CNP3526	CNP3526
83	Plug(CN851)	·····	CKS1242	CKS1242	·····	·····
84	Cord	·····	CDE4138	CDE4138	·····	·····
85	Cap	·····	CNV2680	CNV2680	·····	·····
86	Spacer	·····	CNM4027	CNM4027	·····	·····
87	Remote Control Assy	·····	CXA6155	CXA6155	·····	·····
88	Battery Cover	·····	CNS2850	CNS2850	·····	·····
89	IC(IC922)	·····	RPM-678CBR	RPM-678CBR	·····	·····
90	Spacer	·····	CNM3882	·····	CNM3882	·····

- **CD Mechanism Module(Exploded View:Page 2-11)**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	PMS26P040FMC	11	Screw	CBA1077
2	Control Unit	CWX1641	12	Screw	CBA1230
3	Connector(CN1001)	CKS1955	13	Screw	CBA1296
4	Connector(CN1701)	CKS2775	14	Washer	CBF1038
5	Connector(CN1002)	CKS2811	15	Washer	CBF1060
6	Connector(CN1801)	CKS2196	16	Spring	CBH1415
7	CD Mechanism Unit	CXA6475	17	Spring	CBH1417
8	Screw	BMZ20P030FMC	18	Spring	CBH1418
9	Screw	BSZ20P040FMC	19	Spring	CBH1421
10	Screw	CBA1041	20	Spring	CBH1423

Mark	No.	Description	Part No.
	21	Spring	CBH1457
	22	Spring	CBH1552
	23	Spring	CBH1553
	24	Spring	CBH1554
	25	Spring	CBH1555
	26	Spring	CBH1556
	27	Spring	CBH1557
	28	Spring	CBH1558
	29	Spring	CBH1559
	30	Spring	CBH1560
	31	Spring	CBH1576
	32	Spring	CBH1577
	33	Spring	CBH1578
	34	Spring	CBH1583
	35	Spring	CBH1628
	36	Spring	CBL1170
	37	Spring	CBL1171
	38	Spring	CBL1172
	39	Connector	CDE4147
	40	PU Unit	CGY1031
	41	Shaft	CLA2220
	42	Roller	CLA2255
	43	Shaft	CLA2256
	44	Frame	CNC4888
	45	Arm	CNC4889
	46	Lever	CNC4891
	47	Lever	CNC4892
	48	Bracket	CNC4893
	49	Arm	CNC4895
	50	Arm	CNC4898
	51	Bracket	CNC5424
	52	Spacer	CNM3315
	53	Sheet	CNM4066
	54	Sheet	CNM3693
	55	Bracket	CNM3917
	56	Belt	CNT1053
	57	Clamper Unit	CXA6552
	58	Guide	CNV2891
	59	Holder	CNV3276
*	60	Roller	CNV3412
	61	Damper	CNV3720
	62	Arm	CNV3565
	63	Arm	CNV3566
	64	Gear	CNV3567
	65	Gear	CNV3568

Mark	No.	Description	Part No.
	66	Gear	CNV3569
	67	Gear	CNV3570
	68	Arm	CNV3571
	69	Holder	CNV3572
	70	Gear	CNV3573
	71	Holder	CNV3574
	72	Holder	CNV3575
	73	Holder	CNV3576
	74	Rack	CNV3577
	75	Arm	CNV3578
	76	Plate	CNV3629
	77	Guide	CNV3694
	78	P.C.Board	CNP3418
	79	P.C.Board	CNP3666
	80	Screw Unit	CXA2375
	81	Motor Unit	CXA4649
	82	Chassis Unit	CXA5602
	83	Arm Unit	CXA5603
	84	Arm Unit	CXA5604
	85	Bracket Unit	CXA5605
	86	Lever Unit	CXA5606
	87	Arm Unit	CXA5607
	88	Arm Unit	CXA5608
	89	Gear Unit	CXA5609
	90	Motor Unit	CXA5703
	91	Bracket Unit	CXA5938
	92	Frame Unit	CXA6192
	93	Motor Unit	CXA6456
	94	Screw	JFZ17P035FNI
	95	Screw	JFZ20P014FMC
	96	Screw	JFZ20P020FZK
	97	Screw	JFZ20P025FMC
	98	Photo-transistor	PT4800
	99	Washer	YE15FUC
	100	Washer	YE20FUC
	101	Spacer	CNM3999
	102	Sheet	CNM4028
	103	Holder	CNV3805
	104	Spacer	CNC5436
	105	Screw	JFZ20P045FMC

7. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number : CWE1313(DEH-605RDS)
CWE1311(DEH-505SDK,505,405SDK,405)
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

=====Circuit Symbol & No.	Part Name=====	Part No.
IC 1		PA2021B
IC 2		PA2022A
Q 1		3SK195
Q 2 202		2SC2712
Q 3		DTC124EU
Q 51		DTC124TU
Q 52		2SC4207
Q 53		2SA1586
Q 201		2SK435
D 1		1SV172
D 2 3 4		KV1410
D 5		MA151WK-MT
D 6 151 201 202		MA157-MR
D 203		SVC203CP
L 1	Inductor	LCTBR12K2125
L 2 52	Ferri-Inductor	LAU150K
L 51	Ferri-Inductor	LAU2R2K
L 201	Ferri-Inductor	LAU4R7K
L 202	Coil 1mH	CTF1026
L 203	Inductor	LAU390K
L 204	Ferri-Inductor	LAU680K
L 205	Ferri-Inductor	LAU330K
L 206	Inductor	CTF1198
T 1	Coil	CTC1078
T 2	Coil	CTE1077
T 3	Coil	CTC1077
T 4	Coil	CTC1079
T 51	Coil	CTC1081
T 202	Coil	CTB1102
T 203	Coil	CTE1076
T 204	Coil	CTE1074
T 205	Coil	CTE1075
AR 1	Capacitor with Discharge Gap	DSP-201M
CF 1 51	52(DEH-605RDS)	CTF1292
CF 1 51	52(DEH-505SDK,505,405SDK,405)	CTF1290
CF 201	Ceramic Filter	CTF1291
CF 202	Ceramic Filter	CTF1300
X 151	Ceramic Resonator	CSS1308
X 201	Crystal Resonator	CSS1111
VR 51	Semi-fixed 47kΩ(B)	CCP1210
VR 52	Semi-fixed 68kΩ(B)	CCP1211
VR 151	Semi-fixed 10kΩ(B)	CCP1206
VR 152	Semi-fixed 22kΩ(B)	CCP1208

RESISTORS

=====Circuit Symbol & No.	Part Name=====	Part No.
R 1		RS1/16S223J
R 2		RS1/16S271J
R 3 10 16 18 20		RS1/16S223J
R 4 5		RS1/16S0R0J
R 6		RS1/16S680J
R 7 14		RS1/16S563J
R 8		RS1/16S152J
R 9		RS1/16S473J
R 11		RS1/16S474J
R 12		RS1/16S123J
R 13 15 217		RS1/16S563J
R 17 206		RS1/16S102J
R 21 22		RS1/16S560J
R 51 74		RS1/16S391J
R 52		RS1/16S152J
R 53		RS1/16S751J
R 55 157		RS1/16S682J
R 56		RS1/16S332J
R 58 73 203		RS1/16S102J
R 60		RS1/16S123J
R 72		RS1/16S391J
R 101		RS1/16S224J
R 102 222		RS1/16S822J
R 103		RS1/16S223J
R 104		RS1/16S822J
R 151 152		RS1/16S272J
R 153		RS1/16S103J
R 154 155 202		RS1/16S103J
R 156		RS1/16S153J
R 158		RS1/16S183J
R 159 216		RS1/16S103J
R 204 213		RS1/16S222J
R 205		RS1/16S823J
R 207		RS1/16S225J
R 208		RS1/16S752J
R 209		RS1/16S822J
R 214		RS1/16S333J
R 215		RS1/16S330J
R 218		RS1/16S333J
R 220		RS1/16S100J
R 221		RS1/16S473J

CAPACITORS

=====Circuit Symbol & No.	Part Name=====	Part No.
C 1 54		CCSRCH220J50
C 2		CCSRCH390J50
C 3 102 154 163 203 210		CKSQYB473K16
C 4 12		CCSRCH070D50
C 5 53		CCSRCH270J50

=====Circuit Symbol & No.	Part Name=====	Part No.
C 6		CKSRYB222K50
C 7		CCSRCH040C50
C 8 105		CKSRYB222K50
C 9 16		CCSRCH470J50
C 10		CCSRCH090D50
C 11		CKSRYB223K25
C 13		CCSRCH070D50
C 14		CKSRYB103K50
C 15 22 55 101 151 164 219 220 225 227		CKSQYB104K25
C 17		CCSRCH100D50
C 18		CCSRCH080D50
C 19 20 21 52 62 71 74 201 207 209		CKSRYB103K50
C 23		CEA3R3M50LL
C 24 29 73 106 213		CKSRYB223K25
C 25		CKSRYB682K50
C 26 28 231		CEA101M16LL
C 51 223		CKSRYB103K50
C 56 162 211		CEA010M50LL
C 57 64 66 237		CCSRCH101J50
C 58		CKSRYB153K25
C 60		CEAR47M50LL
C 61		CEAR22M50LL
C 63		CKSQYB104K25
C 65		CEA0R1M50LL
C 103		CKSQYB222K50
C 104		CEA4R7M35LL
C 152 153		CKSRYB223K25
C 155		CEAR47M50LL
C 156		CKSQYB563K16
C 158 212		CEA100M16LL
C 159		CCSRCH331J50
C 160		CKSYB105K16
C 161		CKSQYB104K25
C 202		CKSRYB332K50
C 204		CCSRCH120J50
C 205		CCSRCH560J50
C 206 221		CCSRCH680J50
C 208		CEA470M16LL
C 214 230		CKSRYB472K50
C 215 228		CKSRYB103K50
C 216		CCSRCH100D50
C 217		CCSRCH221J50
C 218 234		CEA220M16LL
C 222		CCSRCH150J50
C 224		CCSRCH181J50
C 226		CEA4R7M35LL
C 229		CEAR68M50LL
C 232		CCSRCH390J50
C 233		CKSRYB332K50
C 235		CKSQYB104K25
C 236		CKSRYB223K25

Unit Number : CWX1648(DEH-605RDS)
Unit Name : Tuner Amp Unit

MISCELLANEOUS

=====Circuit Symbol & No.	Part Name=====	Part No.
IC 471		NJM4558L
IC 481		LC7538JMHS
IC 482 483		NJM4558MD
IC 501		LC72140M
IC 551		PA3029A
IC 601		PD4483B
IC 771		CWV1044
IC 961		PAJ001A
IC 971		PA2023A
Q 451 452 502 504 508 771 773		2SC2712
Q 453 454 455 456		DTC314TK
Q 457		2SA1162
Q 501		2SC3295
Q 503		2SC3098
Q 505 509		2SK208
Q 551 601 604 606 864 957 983		DTC114EK
Q 602 863 982		DTA114EK
Q 603 605 607 956		2SB1238
Q 772		DTC124EK
Q 861 862		2SC2712
Q 981		2SD2396
D 501 971		MA151WK-MT
D 504 505		MA3027H
D 771 972 973		1SS133
D 772		MTZ4R7B
D 861		MA151WA-MN
D 951 952 957 961		ERA15-02VH
D 956		ERA15-10VH
D 981		RB100AVH
D 984		HZS9LC3
L 501	Ferri-Inductor	CTF-157
L 502	Ferri-Inductor	LAU220K
L 601 602 603	Ferri-Inductor	LAU470K
TH 601	Thermistor	CCX1008
IB 551 552	Diode Array	CWW1338
IB 601	Diode Array	CWW1336
IB 602	Diode Array	CWW1337
X 501	Crystal Resonator	CSS1011
X 601	Crystal Resonator	CSS1023
VR 771	Semi-fixed 2.2kΩ(B)	VRMB6VS222
BZ 601	Buzzer	CPV1011
TUN501	FM/AM Tuner Unit	CWE1313

RESISTORS

=====Circuit Symbol & No.	Part Name=====	Part No.
R 451 452 514 515 521 522 602 604 618 619		RS1/10S473J
R 453 454		RS1/10S0R0J
R 455 456 457 458 463 464 529 533 536 538		RS1/10S102J
R 459 460 505 865 866 952 956		RS1/10S223J
R 467 468 488 489 490 491		RS1/10S103J
R 471 472		RS1/10S272J
R 473 474		RD1/4PS163JL
R 475 476		RS1/10S273J
R 477 478		RS1/10S331J
R 481 482		RS1/10S272J
R 485 486 487 566 567 568 569		RD1/4PS472JL
R 492 493 494 495 507 974		RS1/10S103J
R 503 508 509 512 516 530 551 552 553 554		RS1/10S472J
R 504 511 513 534 535 601 603 863		RS1/10S222J
R 506		RS1/10S221J
R 510		RS1/10S123J
R 517 518 519 520		RD1/4PS222JL
R 523		RS1/10S563J
R 524 784		RS1/10S101J
R 525 782		RS1/10S332J
R 526		RS1/10S331J
R 527		RS1/10S821J
R 528		RS1/10S680J
R 531		RS1/8S103J
R 532 781		RS1/10S152J
R 539 540 541 605 606 616 652 657 658 659		RS1/10S102J
R 542		RS1/10S822J
R 545 546		RS1/8S0R0J
R 548		RS1/10S330J
R 549		RD1/4PS102JL

=====Circuit Symbol & No.	Part Name=====	Part No.
R 555 556		RS1/10S2R2J
R 557		RD1/4PS102JL
R 558 559 560 561 562 563 564 565		RD1/4PS2R2JL
R 570		RD1/4PS752JL
R 571		RS1/10S560J
R 573		RS1/10S682J
R 617		RS1/8S473J
R 620 963		RS1/10S683J
R 621 634 772 773 774 775 776 777 778		RS1/10S473J
R 622 624		RD1/4PS222JL
R 623 625 971		RS1/10S104J
R 626		RS1/10S183J
R 627 629 632 957 973 984		RS1/10S472J
R 628 630 958		RD1/4PS272JL
R 633		RD1/4PS472JL
R 645 646 647		RS1/10S472J
R 648		RS1/10S682J
R 651		RD1/4PS102JL
R 653 654 655 656		RS1/10S681J
R 660 662 663 664 780 783 972		RS1/10S102J
R 670 671 672		RD1/4PS472JL
R 673		RD1/4PS103JL
R 771		RS1/10S471J
R 861 862		RD1/4PS821JL
R 864		RS1/8S222J
R 951		RS1/10S0R0J
R 959		RD1/4PS513JL
R 961		RS1/8S823J
R 962		RS1/10S363J
R 964		RD1/4PS473JL
R 965		RD1/4PS273JL
R 966		RS1/10S103J
R 981		RD1/4PS471JL
R 982		RD1/4PS221JL
R 983		RS1/10S392J

CAPACITORS

=====Circuit Symbol & No.	Part Name=====	Part No.
C 451 452		CEAS4R7M25
C 471 472 481 482 861		CEAS100M16
C 473 474		CCSQCH560J50
C 475 951 963	1000 μ F/16V	CCH1149
C 476 477		CKSQYB393K25
C 483 484 485 486 491 492 553 567 568 569		CEA100M16LL
C 487 488		CKSYB224K16
C 489 490		CKSQYB272K50
C 493 494 506 507		CKSQYB223K25
C 495 496		CKSQYB562K50
C 497 498 499 500		CCSQCH330J50
C 501 505 509 512 517		CCSQCH101J50
C 502 607 982		CKSQYB473K25
C 504 510 514 523 772 952 954		CKSQYB103K25
C 511		CCSQCH681J50
C 513	0.047 μ F	CCG1008
C 515		CFTNA474J50
C 516		CEA4R7M35LL
C 518 519		CCSQCH120J50
C 520	4.7 μ F/16V	CCH1165
C 551 552 554 555 606		CKSQYB102K50
C 556	3300 μ F/16V	CCH1150
C 557 558 601 609 956		CKSQYB104K25
C 559 560 561 562 563 564 565 566		CQMA104J50
C 570 608		CEA100M16LL
C 571 572 573 574		CCSQCH220J50
C 575		CEAS4R7M25
C 603		CKSQYB104K25
C 604 605		CCSQCH150J50
C 610		CKSQYB104K25

=====Circuit Symbol & No.	Part Name=====	Part No.
C 612 613		CKSQYB102K50
C 771		CEAR47M50LL
C 773 862		CEA100M16LL
C 863 864		CCSQCH221J50
C 962		CEAR22M50LL
C 964		CEA2R2M50LL
C 965		CEA220M6R3LL
C 971		CEA010M50LL
C 972		CEAS470M10
C 973		CEAS101M10
C 974		CEAS221M10
C 975	330 μ F/10V	CCH1181
C 981		CEAS331M16

Unit Number : CWX1641
Unit Name : Control Unit

MISCELLANEOUS

=====Circuit Symbol & No.	Part Name=====	Part No.
IC 1001		UPC2571GS
IC 1201		UPD63700GF
IC 1301		PA3026
IC 1302		XRA6285FP
IC 1303		NJM4558M
IC 1601		TC9268F
IC 1602		TA2063F
IC 1701		PQ05TZ51
Q 1001		2SB1260
Q 1601 1602		2SD1781K
Q 1603		2SB709A
D 1601		MA151WA-MN
D 1701 1702 1703 1704		SC016-2
D 1801 1802	Chip LED	CL200IRX
L 1601	Inductor	LCTBR39K2125
X 1601	Crystal Resonator	CSS1067
S 1801 1802	Switch(Home,Clamp)	CSN1028
VR1001	Semi-fixed 2.2kΩ (B)	CCP1177
VR1002	Semi-fixed 22kΩ (B)	CCP1183
VR1003 1004	Semi-fixed 47kΩ (B)	CCP1185

RESISTORS

=====Circuit Symbol & No.	Part Name=====	Part No.
R 1001		RS1/8S100J
R 1002		RS1/8S120J
R 1003 1201 1307 1309		RS1/16S103J
R 1004 1013 1024 1025 1311 1315 1318 1708		RS1/16S102J
R 1005		RS1/16S823J
R 1006		RS1/16S182J
R 1007		RS1/16S333J
R 1011 1012		RS1/16S683J
R 1014 1015 1310		RS1/16S473J
R 1018		RS1/16S622J
R 1019		RS1/16S563J
R 1020		RS1/16S622J
R 1021		RS1/16S513J
R 1022		RS1/16S133J
R 1027		RS1/16S183J
R 1028		RS1/16S822J
R 1301 1302		RS1/16S222J
R 1303 1606 1607		RS1/16S223J
R 1304		RS1/16S123J
R 1305 1306 1705		RS1/16S332J
R 1308		RS1/16S163J
R 1314		RS1/16S0R0J
R 1317		RS1/16S473J
R 1601		RS1/16S301J
R 1604 1605		RS1/16S102J
R 1608 1609		RS1/16S162J
R 1610		RS1/16S103J
R 1801 1802		RS1/8S821J

=====Circuit Symbol & No. Part Name===== Part No.

CAPACITORS

C 1001 1008 1010 1011 1303		CKSRYB102K50
C 1002 1609 1706		CEV101M6R3
C 1003		CKSQYB104K16
C 1004		CEV470M6R3
C 1005		CCSRCH101J50
C 1006		CKSRYB561K50
C 1007 1704		CKSYB334K16
C 1009		CCSRCH181J50
C 1012 1307 1310 1605 1608		CKSRYB103K50
C 1013		CKSRYB472K50
C 1014		CCSRCH220J50
C 1015 1016 1017 1018 1201 1202		CKSYF105Z16
C 1021		CKSYB104K16
C 1022		CKSRYB332K50
C 1023		CKSRYB561K50
C 1301 1302		CKSRYF683Z25
C 1304		CKSRYB152K50
C 1305		CKSRYB271K50
C 1308		CKSRYF103Z50
C 1309		CEV470M16
C 1601		CCSRCH151J50
C 1602		CCSRCH100D50
C 1603 1604 1705		CKSYB224K16
C 1606 1607		CCSRCH090D50
C 1612		CEV220M6R3
C 1613 1614		CEV4R7M35
C 1701 1702		CCSRCH100D50
C 1703		CEV220M16

Unit Number : CWX1661(DEH-605RDS)
Unit Name : Key Board Unit

MISCELLANEOUS

IC 901		PD6122A
Q 901 902		2SB1132
Q 903		UN2211
D 901 902		MA153-MC
D 903		MA3047M
L 901	Coil	LCTB150K3216
X 901	Ceramic Resonator	CSS1084
IL 901 902 903	Lamp 14V 40mA	CEL1297
IL 904 905 906	Lamp 14V 40mA	CEL1295
LCD901	LCD	CAW1228

RESISTORS

R 901 902 903 908		RS1/8S222J
R 904 906		RS1/10S472J
R 905 907		RS1/10S332J
R 909 910		RS1/8S471J
R 911 912 913 914 915 916 917 918 919		RS1/10S471J
R 920		RS1/10S121J

CAPACITORS

C 901 902 903 904		CKSQYB103K25

=====Circuit Symbol & No. Part Name===== Part No.

Unit Number : CWX1662(DEH-505SDK,505)
CWX1664(DEH-405SDK,405)
Unit Name : Key Board Unit

MISCELLANEOUS

IC 921		LC7582E
IC 922	(DEH-505SDK,505)	RPM-678CBR
D 921 922 923		MA153-MC
IL 921 922 923	Lamp 14V 40mA	CEL1295
IL 924 925 926	Lamp 14V 40mA	CEL1297
LCD901	LCD	CAW1229

RESISTORS

R 921	(DEH-505SDK,505)	RS1/10S470J
R 923 926 930 934		RS1/8S822J
R 924 927 931 935		RS1/10S133J
R 925 928 932 936		RS1/10S223J
R 929 933 937		RS1/10S683J
R 938 939		RS1/10S104J
R 940 941 942		RS1/10S103J

CAPACITORS

C 921	(DEH-505SDK,505)	CEA470M6R3LS
C 922		CCSQCH301J50
C 923		CKSQYF104Z25
C 924		CKSQYF224Z25
C 925		CKSQYB103K50

Unit Number :
Unit Name : Detector P.C.Board

P 1 2	Photo Transistor	PT4800

Miscellaneous Parts List

M 1	Motor Unit(Spindle)	CXA5703
M 2	Motor Unit(Carriage)	CXA4649
M 3	Motor Unit(Loading)	CXA6456
	PU Unit	CGY1031

Circuit Symbol & No.	DEH-605RDS	DEH-505SDK	DEH-505	DEH-405SDK	DEH-405
	Part No.	Part No.	Part No.	Part No.	Part No.
Tuner Amp Unit	CWX1648	CWX1649	CWX1651	CWX1650	CWX1652
R782	RS1/10S332J	RS1/10S332J	•••••	RS1/10S332J	•••••
R783	RS1/10S102J	•••••	•••••	•••••	•••••
R784	RS1/10S101J	RS1/10S101J	•••••	RS1/10S101J	•••••
R851,852	•••••	RD1/4PS821JL	RD1/4PS821JL	•••••	•••••
R853,854	•••••	RS1/10S222J	RS1/10S222J	•••••	•••••
R855,856	•••••	RS1/10S223J	RS1/10S223J	•••••	•••••
C604,605	CCSQCH150J50	•••••	•••••	•••••	•••••
C610	CKSQYB104K25	•••••	•••••	•••••	•••••
C772	CKSQYB103K25	CKSQYB103K25	•••••	CKSQYB103K25	•••••
C773	CEA100M16LL	CEA100M16LL	•••••	CEA100M16LL	•••••
C851	•••••	CEAS100M16	CEAS100M16	•••••	•••••
C852	•••••	CEA100M16LL	CEA100M16LL	•••••	•••••
C853,854	•••••	CCSQCH221J50	CCSQCH221J50	•••••	•••••

- **The DEH-505SDK, DEH-505, DEH-405SDK and DEH-405 Parts Lists enumerate the parts which differ from those enumerated in the DEH-605RDS Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-605RDS Parts List is given on page 1-42.**

Tuner Amp Unit

	DEH-605RDS	DEH-505SDK	DEH-505	DEH-405SDK	DEH-405
Circuit Symbol & No.	Part No.	Part No.	Part No.	Part No.	Part No.
Tuner Amp Unit	CWX1648	CWX1649	CWX1651	CWX1650	CWX1652
IC601	PD4483B	PDR009B	PDR009B	PDR009B	PDR009B
IC771	CWV1044	CWV1045	•••••	CWV1045	•••••
Q455,456,771	2SC2712	2SC2712	•••••	2SC2712	•••••
Q601	DTC114EK	DTC114EK	•••••	DTC114EK	•••••
Q773	2SC2712	•••••	•••••	•••••	•••••
Q851,852	•••••	2SC2712	2SC2712	•••••	•••••
D771	1SS133	•••••	•••••	•••••	•••••
D772	MTZ4R7B	MTZ4R7B	•••••	MTZ4R7B	•••••
VR771	VRMB6VS222	•••••	•••••	•••••	•••••
BZ601	CPV1011	CPV1011	•••••	CPV1011	•••••
X601	CSS1023	CSS1065	CSS1065	CSS1065	CSS1065
FM/AM Tuner Unit	CWE1313	CWE1311	CWE1311	CWE1311	CWE1311
R605,606,780	RS1/10S102J	RS1/10S102J	•••••	RS1/10S102J	•••••
R607,779	•••••	RS1/10S0R0J	•••••	RS1/10S0R0J	•••••
R608	•••••	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J
R609	•••••	•••••	•••••	RS1/10S0R0J	RS1/10S0R0J
R611	•••••	•••••	RS1/10S473J	•••••	RS1/10S473J
R613	•••••	RS1/10S473J	RS1/10S473J	•••••	•••••
R614	•••••	RS1/10S473J	RS1/10S473J	RS1/10S473J	RS1/10S473J
R615	•••••	RS1/10S102J	•••••	RS1/10S102J	•••••
R636,637,638,639	•••••	RD1/4PS103JL	RD1/4PS103JL	RD1/4PS103JL	RD1/4PS103JL
R640,641,642,643	•••••	RS1/10S103J	RS1/10S103J	RS1/10S103J	RS1/10S103J
R644	•••••	RS1/10S103J	RS1/10S103J	RS1/10S103J	RS1/10S103J
R648	RS1/10S682J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J
R649	•••••	RS1/10S105J	RS1/10S105J	RS1/10S105J	RS1/10S105J
R673	RD1/4PS103JL	•••••	•••••	•••••	•••••
R771	RS1/10S471J	RS1/10S471J	•••••	RS1/10S471J	•••••
R772	RS1/10S473J	RS1/10S473J	•••••	RS1/10S473J	•••••
R773,774,775,776	RS1/10S473J	•••••	•••••	•••••	•••••
R777,778	RS1/10S473J	•••••	•••••	•••••	•••••
R781	RS1/10S152J	RS1/10S152J	•••••	RS1/10S152J	•••••

PIONEER
The Art of Entertainment

Service Manual

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HIGH POWER CD PLAYER WITH RDS TUNER

DEH-605RDS EW,X1B/EW

HIGH POWER CD PLAYER WITH FM/MW/LW TUNER

DEH-505SDK GR

DEH-505 EW,X1B/EW

DEH-405SDK GR

DEH-405 EW,X1B/EW

- **See the service manual CX-540(CRT1574) for the CD mechanism description, disassembly and circuit description.**

CHAPTER 2

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CHAPTER 2

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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1. PACKING METHOD

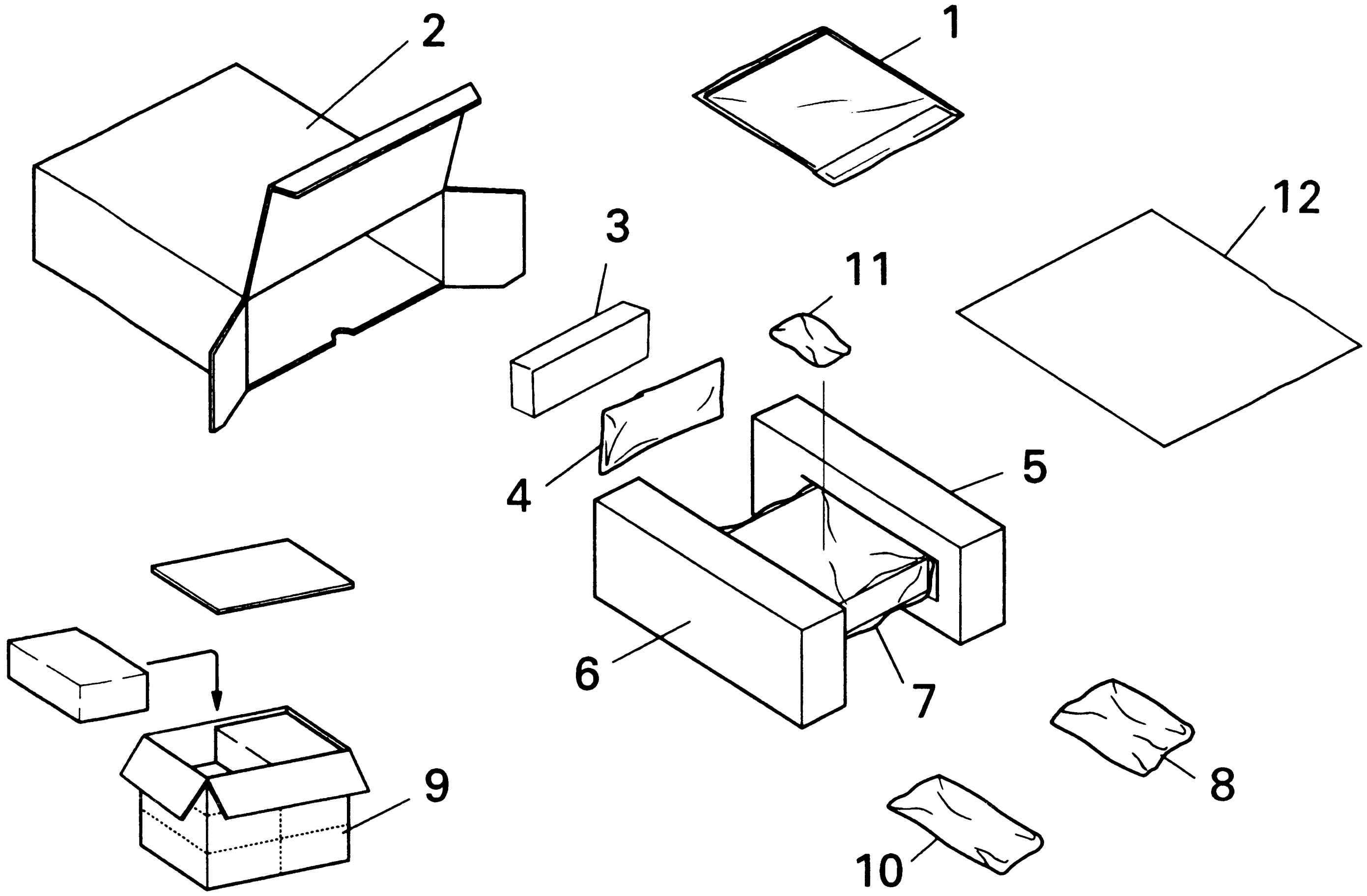


Fig.1

● Parts List(DEH-605RDS)

*: Non Spare Part

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD1717
	1-2	Owner's Manual	CRD1718
	1-3	Installation Manual	CRD1719
*	1-4	Card	CRY-062
*	1-5	Passport	CRY1013
*	1-6	Caution Card	CRP1129
	1-7	Polyethylene Bag	CEG1116
	2	Carton	CHG2427
	3	Case	CNS2269
	4	Cord Assy	CDE4142
	5	Protector	CHP1603
	6	Protector	CHP1602
	7	Cover	CEG1092
	8	Accessory Assy	CEA1917
	8-1	Screw	CBA1284
	8-2	Handle(X2)	CNC4947
	8-3	Bush	CNV1009
*	8-4	Polyethylene Bag	E36-615
	9	Contain Box	CHL2427
	10	·····	
	11	·····	
	12	Spacer(except X1B model)	CHW1387

- **The DEH-505SDK, DEH-505, DEH-405SDK and DEH-405 Parts Lists enumerate the parts which differ from those enumerated in the DEH-605RDS Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-605RDS Parts List is given on page 2-2.**

Mark	No.	Description	DEH-605RDS	DEH-505SDK	DEH-505	DEH-405SDK	DEH-405
	1-1	Owner's Manual	CRD1717	CRD1723	CRD1720	CRD1723	CRD1720
	1-2	Owner's Manual	CRD1718	•••••	•••••	•••••	•••••
*	1-5	Passport	CRY1013	CRY1013	•••••	CRY1013	•••••
	2	Carton	CHG2427	CHG2429	CHG2428	CHG2420	CHG2419
	9	Contain Box	CHL2427	CHL2429	CHL2428	CHL2420	CHL2419
	10	Accessory Assy	•••••	CEA1473	CEA1473	•••••	•••••
	11	Remote Control Assy	•••••	CXA6155	CXA6155	•••••	•••••

Owner's Manual

Model	Part No.	Language
DEH-605RDS	CRD1717	English,French,Italian,German,Dutch,Spanish,Portuguese
	CRD1718	Swedish,Norwegian,Finnish
DEH-505SDK,405SDK	CRD1723	French,German
DEH-505,405	CRD1720	English,French,Italian,German,Dutch,Spanish,Portuguese, Swedish,Norwegian,Finnish

Installation Manual

Model	Part No.	Language
DEH-605RDS, DEH-505SDK,505, DEH-405SDK,405	CRD1719	English,French,Italian,German,Dutch,Spanish,Portuguese Swedish,Norwegian,Finnish

- **X1B/EW Model**

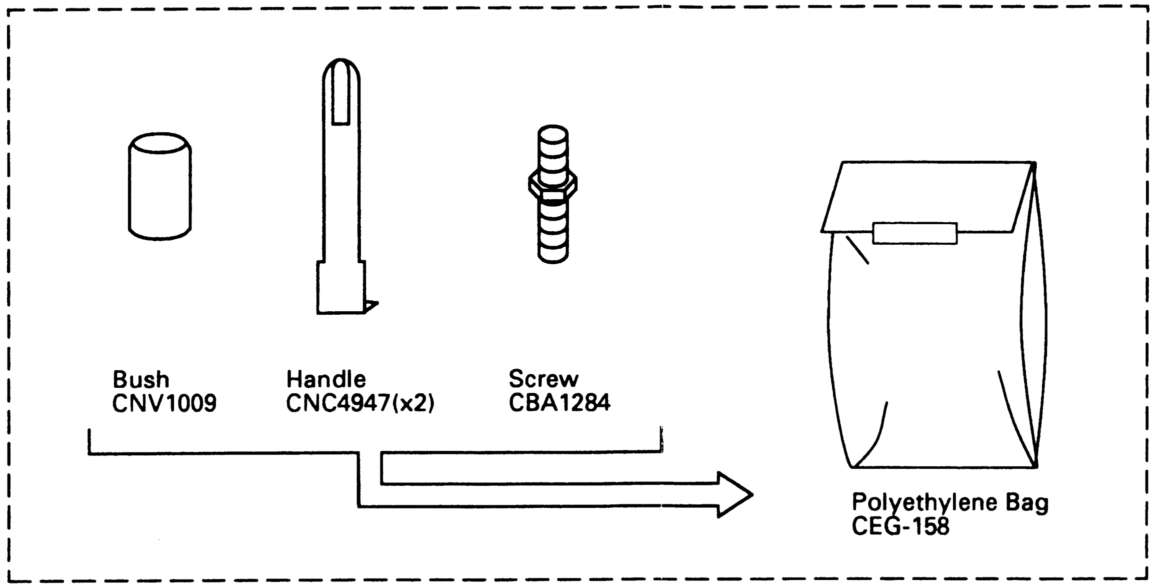
Mark	No.	Description	DEH-605RDS/EW	DEH-605RDS/X1B/EW
	1-2	Owner's Manual	CRD1718	•••••
*	1-4	Card	CRY-062	URY-001
*	1-5	Passport	CRY1013	CRY1014
	1-7	Polyethylene Bag	CEG1116	E36-618
	7	Cover	CEG1092	UEG-002
	9	Contain Box	CHL2427	UHD-002

Mark	No.	Description	DEH-505/EW	DEH-505/X1B/EW
*	1-4	Card	CRY-062	URY-001
	1-7	Polyethylene Bag	CEG1116	E36-618
	7	Cover	CEG1092	UEG-002
	9	Contain Box	CHL2428	UHD-002

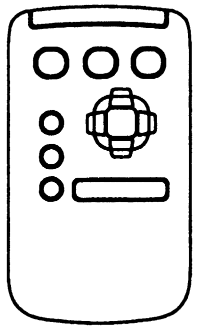
Mark	No.	Description	DEH-405/EW	DEH-405/X1B/EW
*	1-4	Card	CRY-062	URY-001
	1-7	Polyethylene Bag	CEG1116	E36-618
	7	Cover	CEG1092	UEG-002
	9	Contain Box	CHL2419	UHD-002

- **Accessory Assy**

Accessory Assy CEA1917



Remote Control Assy CXA6155



Accessory Assy CEA1473

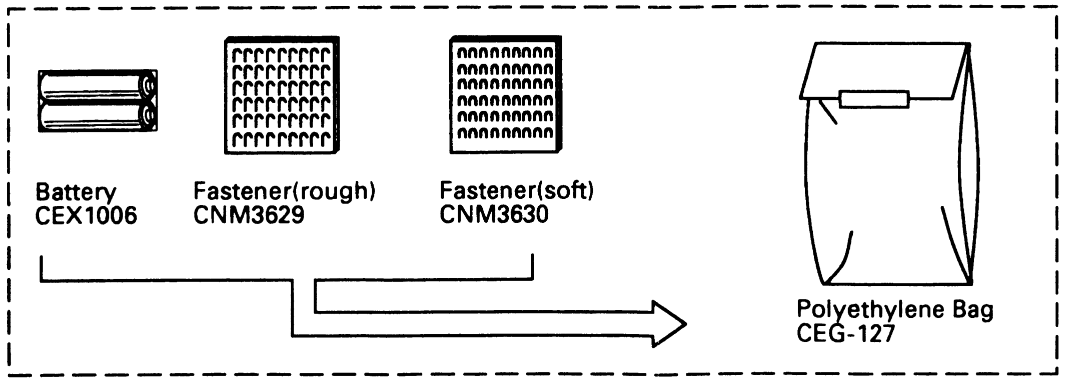
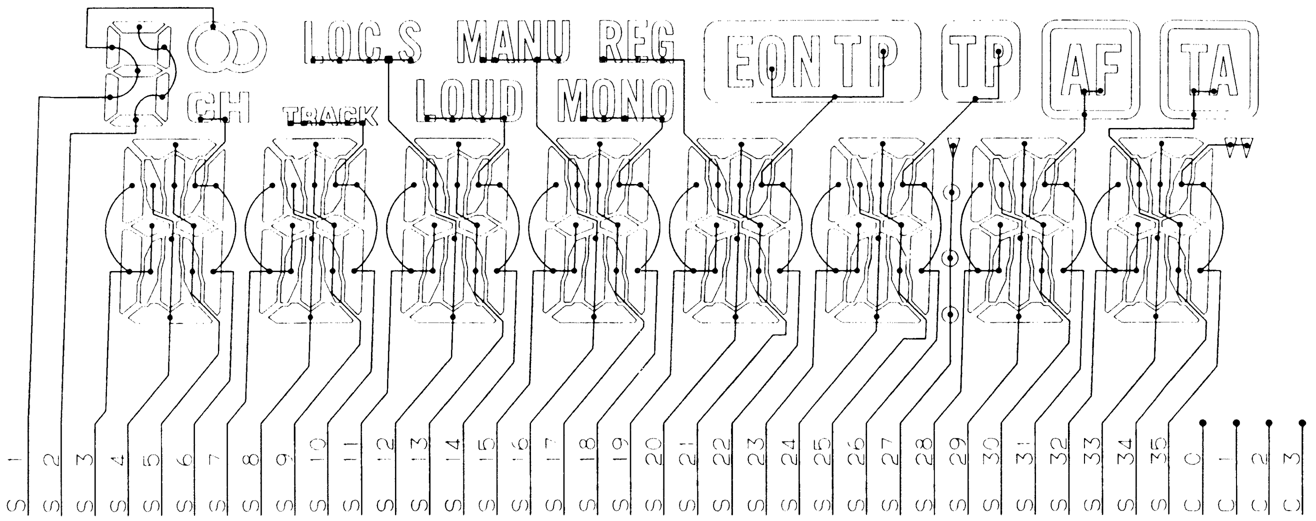


Fig.2

● LCD(CAW1228)......DEH-605RDS

SEGMENT


LOC.S
MANU
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LOUD
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S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
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S21
S22
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S24
S25
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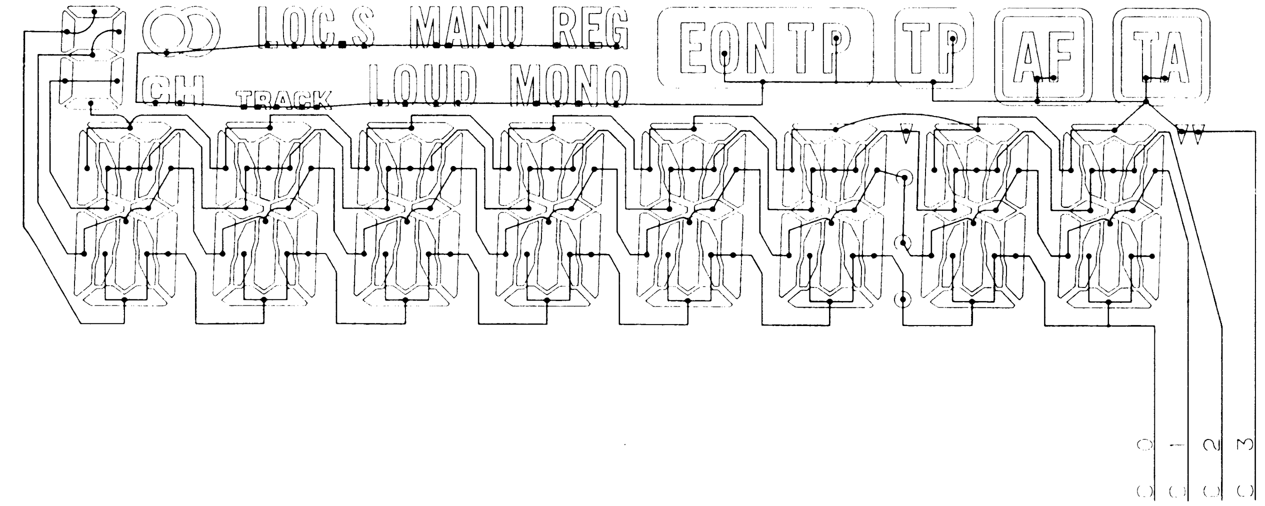
C0
C1
C2
C3

COMMON


LOC.S
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EON TP
TP
AF
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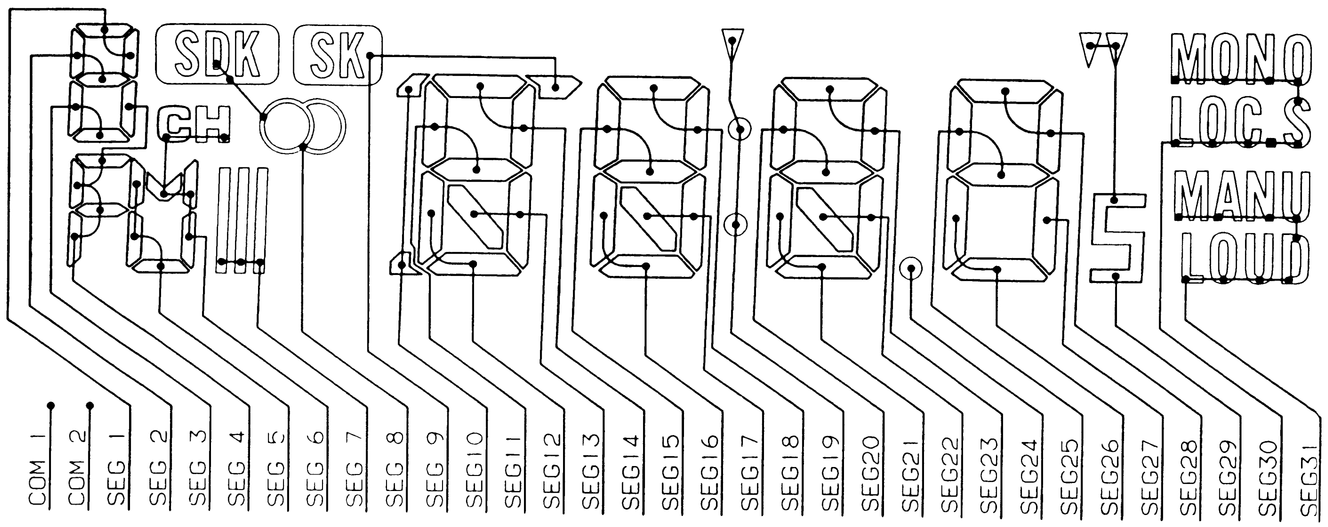
CH
TRACK
LOUD
MONO
C0
C1
C2
C3

Fig.3

● LCD(CAW1229)......DEH-505SDK,505,405SDK,405

SEGMENT


SDK
SK
CH
MONO
LOC.S
MANU
LOUD
COM 1
COM 2
SEG 1
SEG 2
SEG 3
SEG 4
SEG 5
SEG 6
SEG 7
SEG 8
SEG 9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
SEG17
SEG18
SEG19
SEG20
SEG21
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SEG23
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SEG26
SEG27
SEG28
SEG29
SEG30
SEG31

COMMON

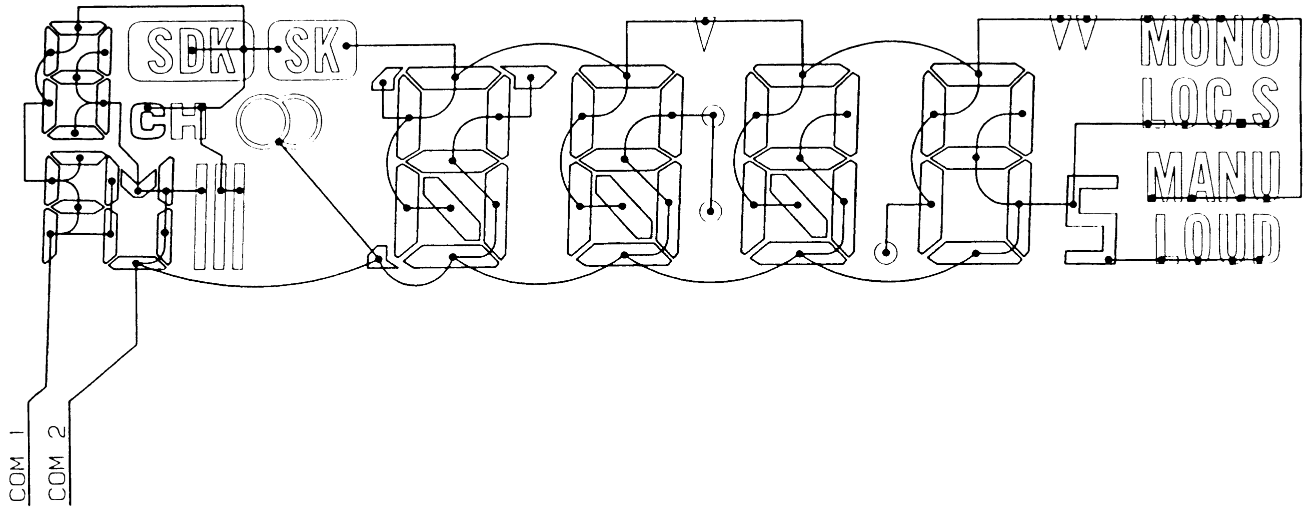

SDK
SK
CH
MONO
LOC.S
MANU
LOUD
COM 1
COM 2

Fig.4

2. BLOCK DIAGRAM

● DEH-605RDS

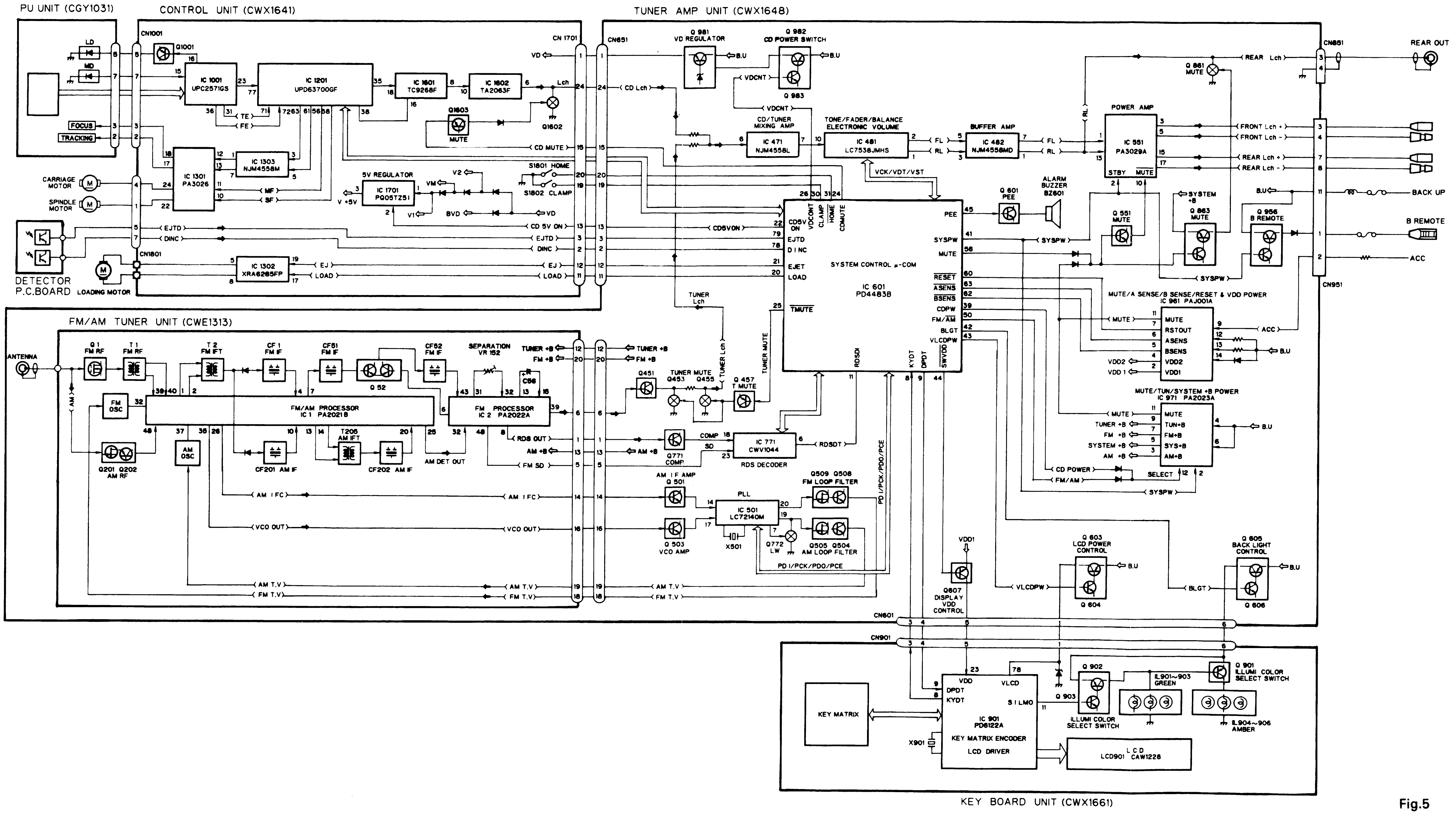
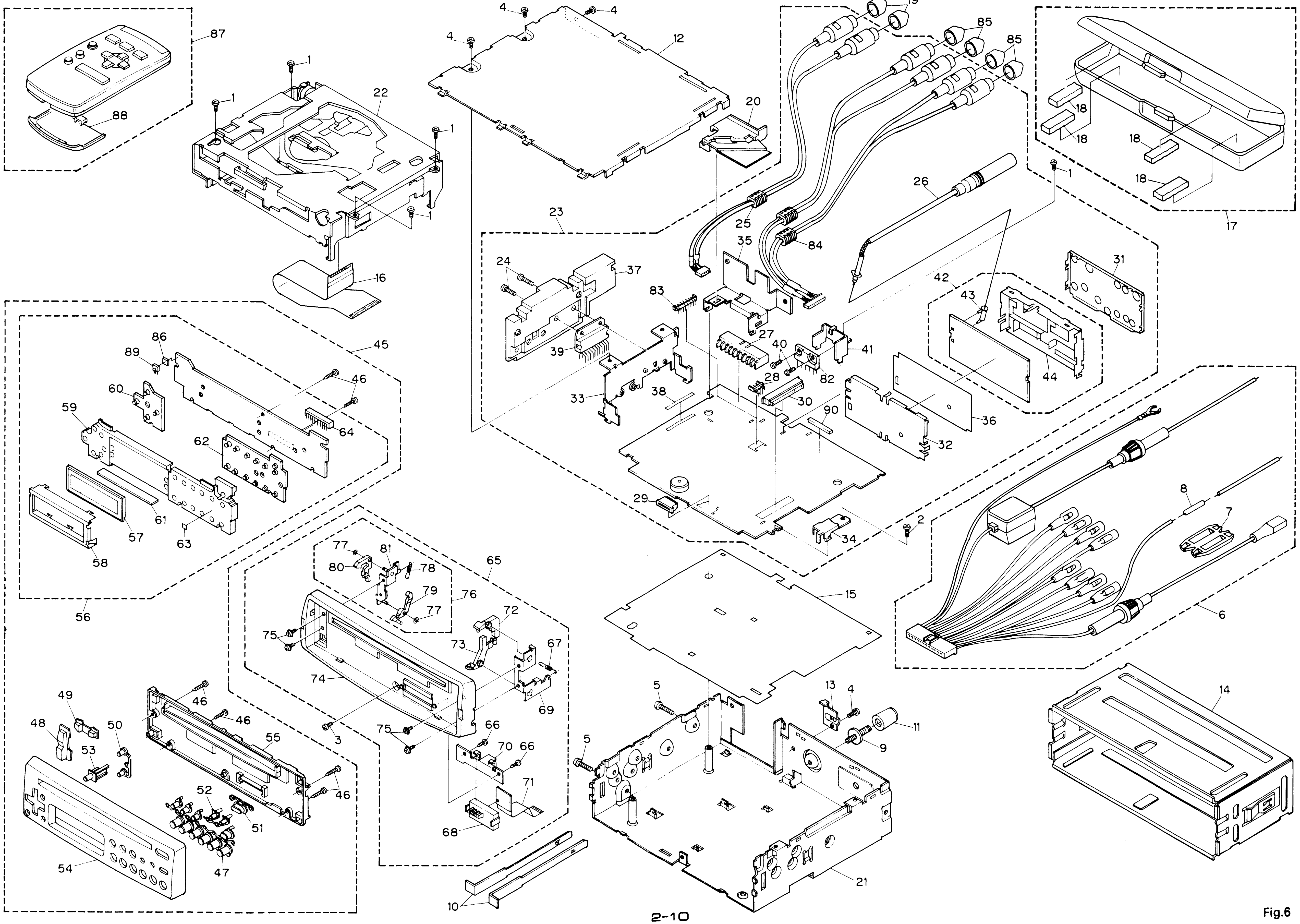

PU UNIT (CGY1031)
CONTROL UNIT (CWX1641)
TUNER AMP UNIT (CWX1648)
LD
MD
FOCUS
TRACKING
CARRIAGE MOTOR
SPINDLE MOTOR
DETECTOR P.C.BOARD
LOADING MOTOR
CN1001
Q1001
IC 1001 UPC2571GS
IC 1201 UPD63700GF
IC 1601 TC9268F
IC 1602 TA2063F
Q1603 MUTE
Q1602
IC 1301 PA3026
IC 1303 NJM4558M
IC 1302 XRA6265FP
5V REGULATOR
IC 1701 PQ05TZ51
S1801 HOME
S1802 CLAMP
CN1801
CN 1701
CN651
Q 981 VD REGULATOR
Q 982 CD POWER SWITCH
Q 983
CD/TUNER MIXING AMP
IC 471 NJM4558L
TONE/FADER/BALANCE ELECTRONIC VOLUME
IC 481 LC7538JMHS
BUFFER AMP
IC 482 NJM4558MD
POWER AMP
IC 551 PA3029A
Q 861 MUTE
CN851
REAR OUT
FRONT Lch +
FRONT Lch −
REAR Lch +
REAR Lch −
BACK UP
B REMOTE
ACC
CN951
SYSTEM CONTROL μ-COM
IC 601 PD4483B
Q 601 PEE
ALARM BUZZER BZ601
Q 551 MUTE
Q 863 MUTE
Q 956 B REMOTE
MUTE/A SENSE/B SENSE/RESET & VDD POWER
IC 961 PAJ001A
MUTE/TUN/SYSTEM +B POWER
IC 971 PA2023A
Q 603 LCD POWER CONTROL
Q 604
Q 605 BACK LIGHT CONTROL
Q 606
Q607 DISPLAY VDD CONTROL
FM/AM TUNER UNIT (CWE1313)
ANTENNA
Q 1 FM RF
T 1 FM RF
T 2 FM IFT
CF 1 FM IF
CF51 FM IF
Q 52
CF52 FM IF
SEPARATION VR 152
FM/AM PROCESSOR IC 1 PA2021B
FM PROCESSOR IC 2 PA2022A
FM OSC
AM OSC
Q201 Q202 AM RF
CF201 AM IF
T205 AM IFT
CF202 AM IF
AM DET OUT
Q451
TUNER MUTE Q453 Q455
Q 457 T MUTE
Q771 COMP
IC 771 CWV1044
RDS DECODER
AM I F AMP Q 501
Q 503 VCO AMP
PLL
IC 501 LC72140M
X501
Q772 LW
Q509 Q508 FM LOOP FILTER
Q505 Q504 AM LOOP FILTER
PD I/PCK/PDO/PCE
CN601
CN901
KEY MATRIX
IC 901 PD6122A
KEY MATRIX ENCODER
LCD DRIVER
X901
Q 902
Q 903
ILLUMI COLOR SELECT SWITCH
Q 901 ILLUMI COLOR SELECT SWITCH
IL901~903 GREEN
IL904~906 AMBER
LCD LCD901 CAW1228
KEY BOARD UNIT (CWX1661)

Fig.5

3. EXPLODED VIEW

● Chassis (Parts List:Page 1-38)


A
B
C
D
87
88
1
22
16
4
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85
85
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23
24
37
39
33
38
25
35
84
83
27
40
28
30
82
41
90
29
34
2
42
43
44
31
36
32
45
86
89
60
59
46
64
62
61
57
58
63
56
65
77
81
80
78
79
77
76
75
72
73
67
74
69
3
75
66
70
66
71
68
49
48
50
53
46
46
55
46
52
51
54
47
10
5
5
13
4
9
11
21
15
14
8
7
6

Fig.6

● CD Mechanism Module (Parts List:Page 1-39)

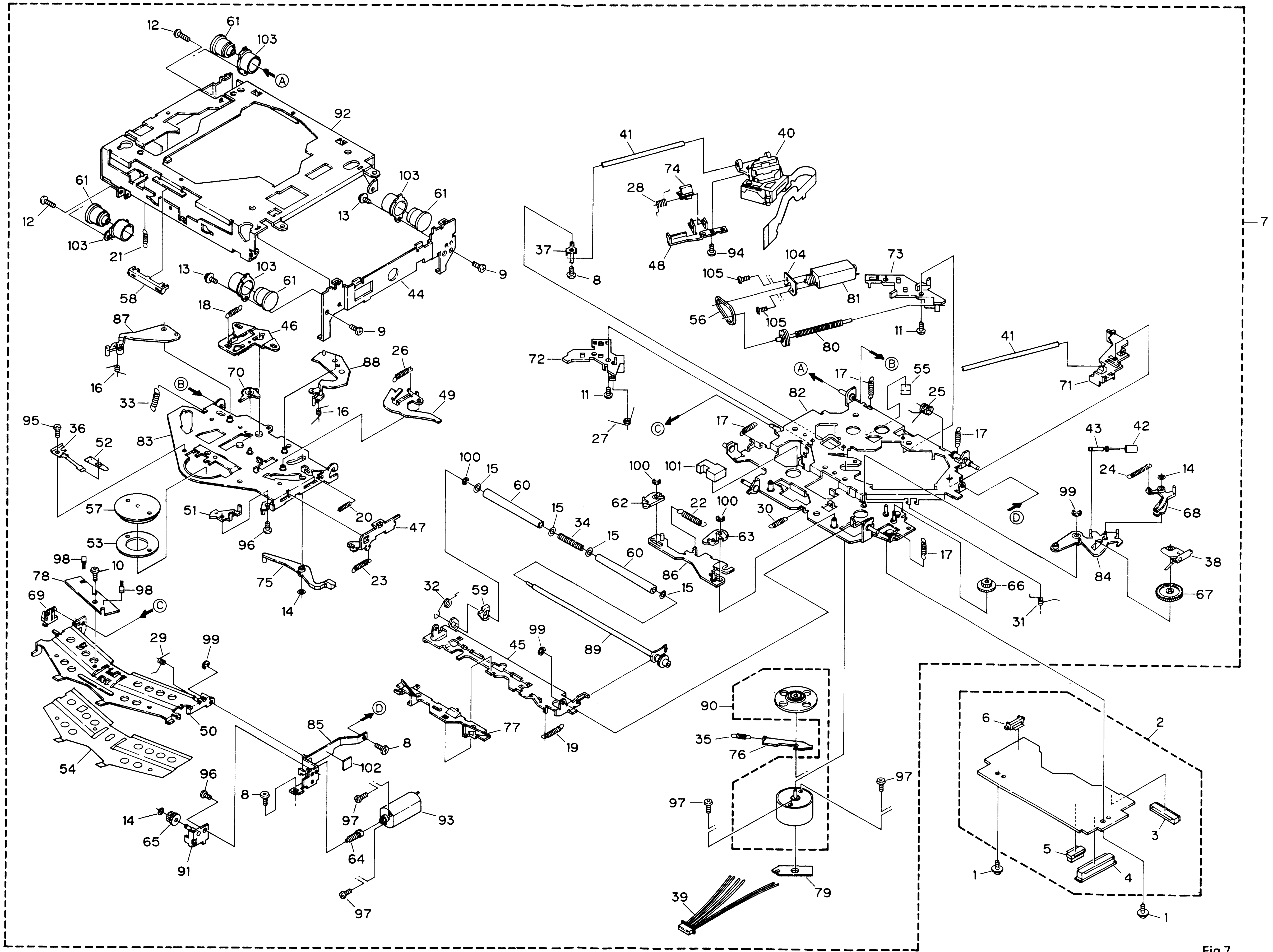
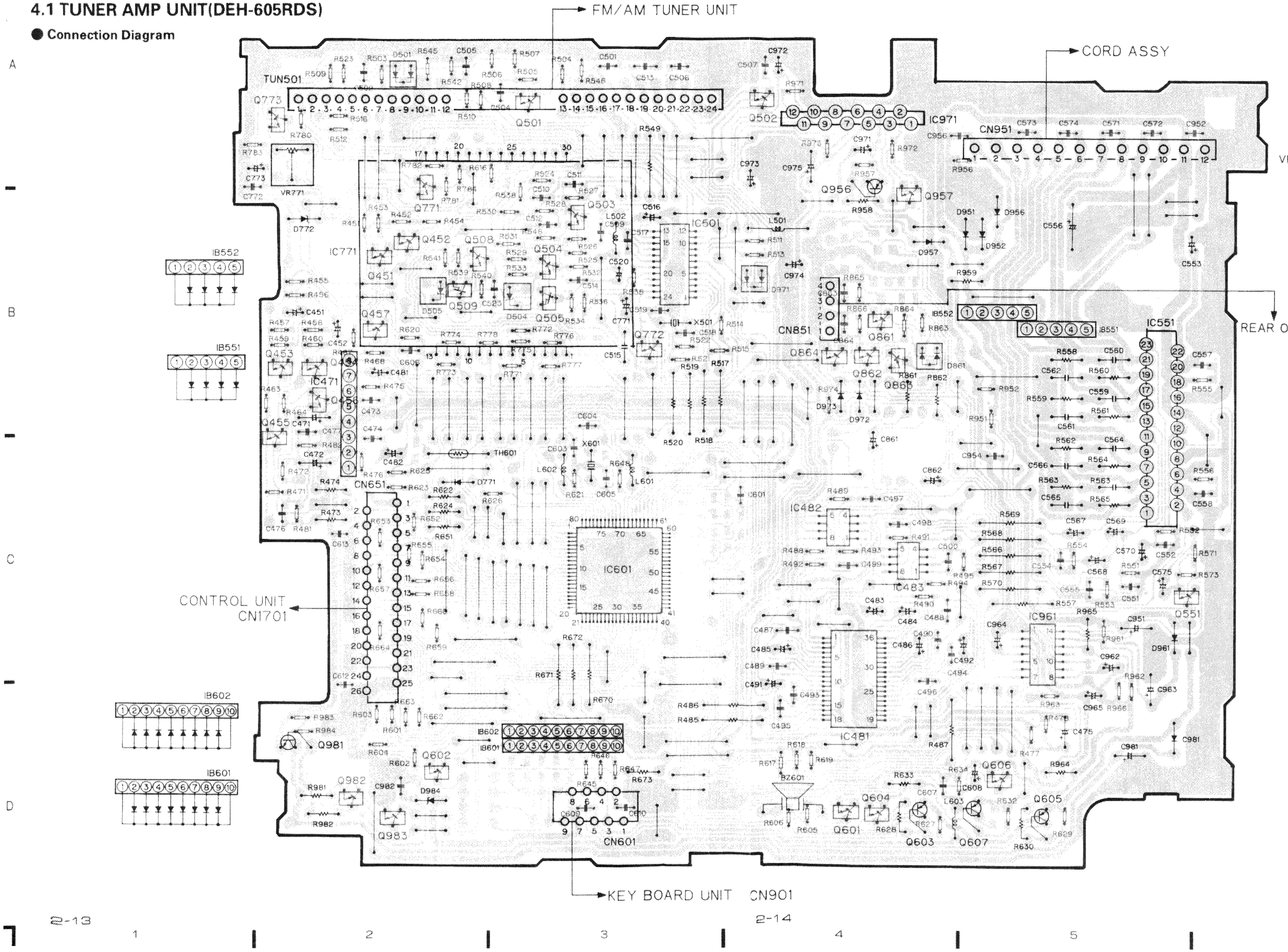

12
61
103
Ⓐ
92
61
12
103
21
103
61
13
13
103
61
9
44
58
18
46
9
87
16
70
88
26
49
Ⓑ
33
16
95
36
52
83
57
51
96
20
47
53
98
10
78
98
69
Ⓒ
75
14
23
29
99
50
54
85
Ⓓ
8
102
96
8
14
65
91
97
93
64
97
41
40
74
28
37
94
8
48
104
105
73
81
56
105
11
80
72
11
Ⓐ
Ⓑ
17
55
25
82
41
71
27
Ⓒ
17
17
43
42
100
15
60
100
101
24
14
62
22
100
30
15
34
99
68
Ⓓ
63
15
60
86
17
84
38
32
59
15
66
67
31
99
45
89
77
19
90
35
76
97
97
79
39
7
2
6
3
5
1
4
1

Fig.7

4. CIRCUIT DIAGRAM AND PATTERN

4.1 TUNER AMP UNIT(DEH-605RDS)

● **Connection Diagram**

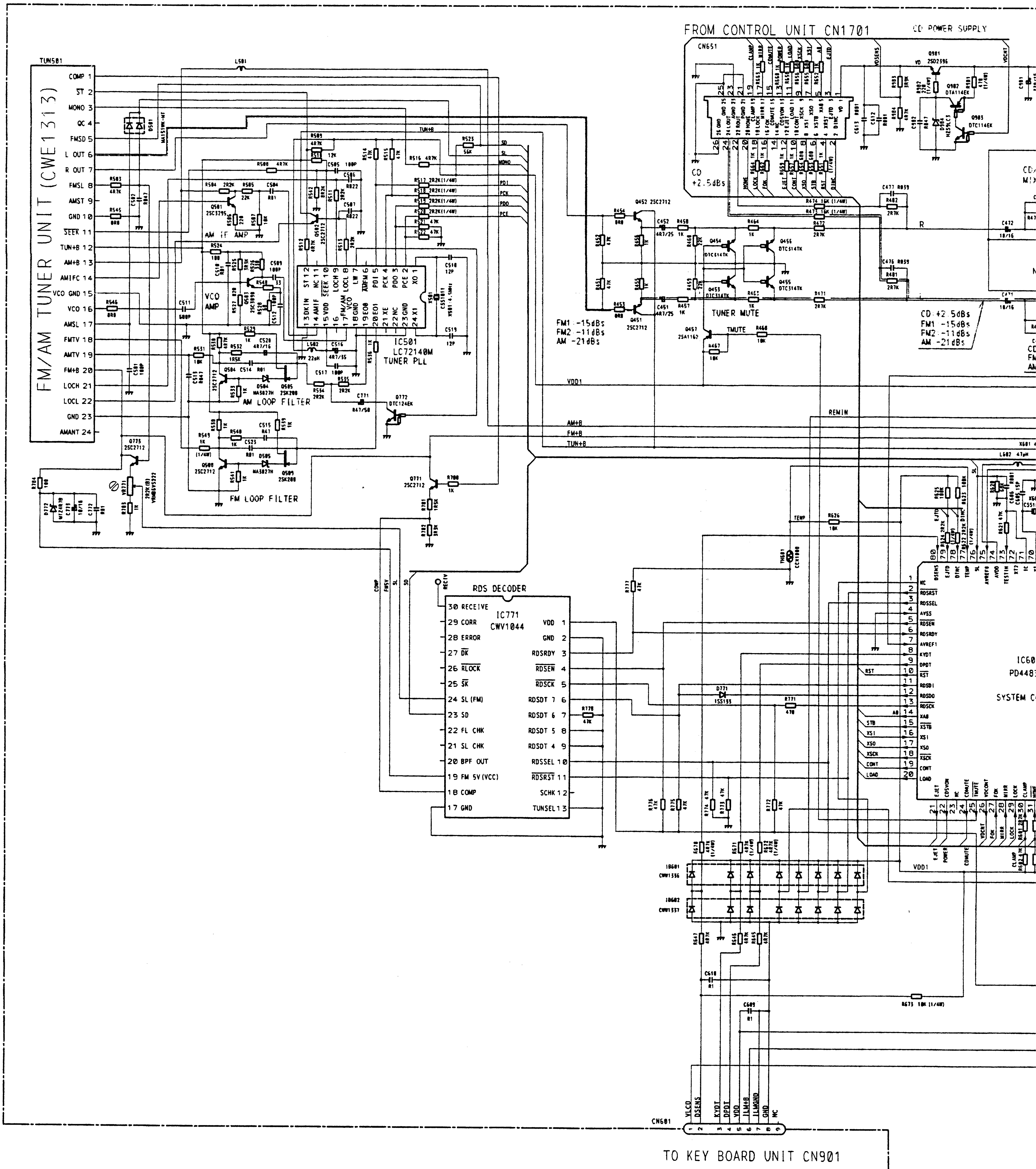

FM/AM TUNER UNIT
CORD ASSY
TUN501
IC971
CN951
IC501
IC771
IC471
IC551
IC482
IC483
IC601
IC961
IC481
CN851
CN651
CN601
IB552
IB551
IB602
IB601
REAR OUT
CONTROL UNIT
CN1701
KEY BOARD UNIT CN901
A
B
C
D
1
2
3
4
5
6

ADJ	IC, Q
	Q501 Q502
	Q773 IC971
VR771	
	Q771 Q956 Q957
	Q503
	Q452 IC501
	IC771 Q451 Q508 Q504
	Q509 Q505
	Q861 Q457 Q772
	Q864 Q862 Q863 Q453 Q454
	Q456
	Q455 IC551 IC471
	IC482
	IC601 IC483
	Q551
	IC961
	IC481
	Q981
	Q602 Q606
	Q982
	Q983 Q601 Q604 Q603 Q607 Q605

Fig.8

● Circuit Diagram

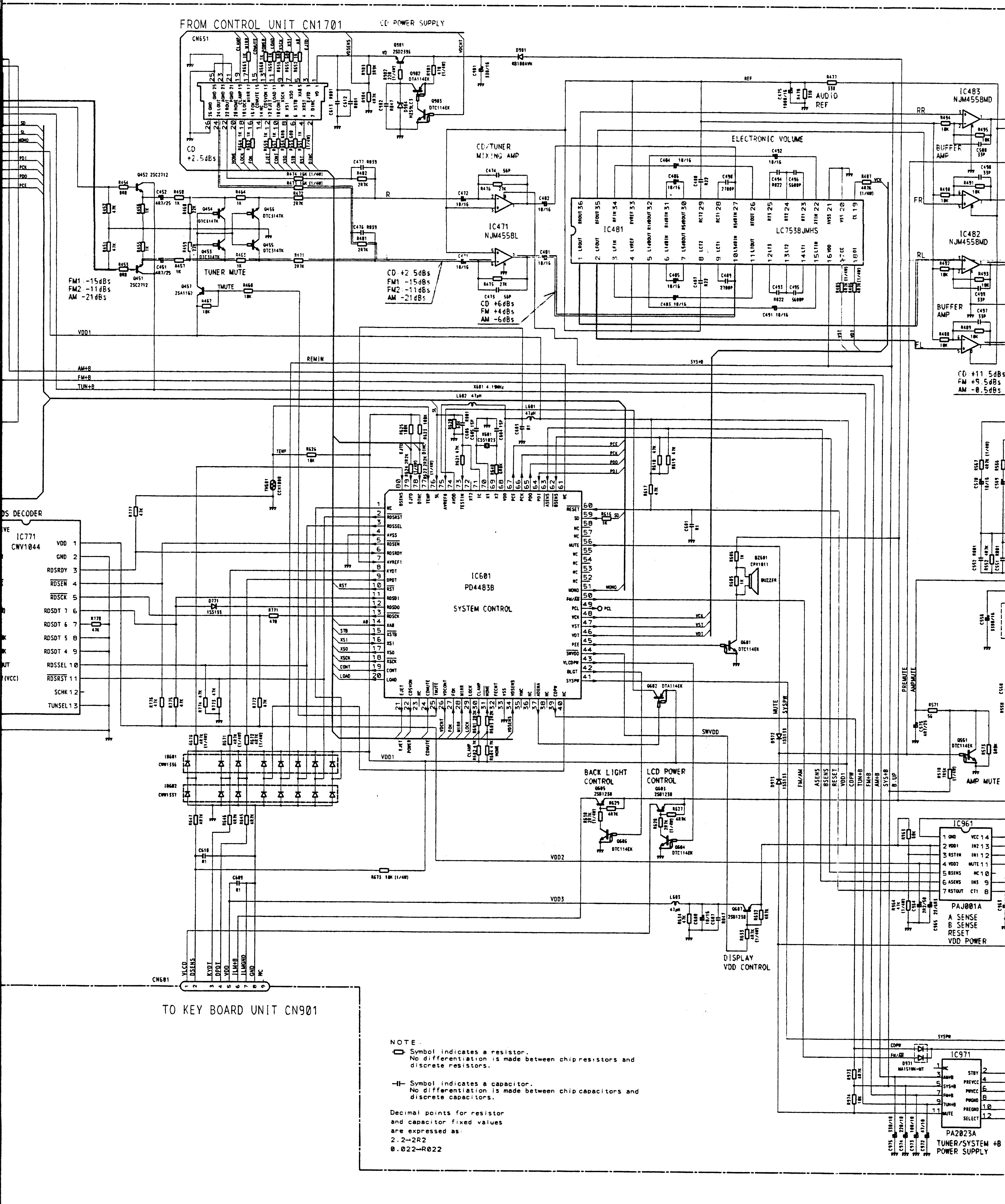
TUNER AMP UNIT(CWX1648)


FROM CONTROL UNIT CN1701
CD POWER SUPPLY
CN651
TUN501
FM/AM TUNER UNIT (CWE1313)
COMP 1
ST 2
MONO 3
QC 4
FMSD 5
L OUT 6
R OUT 7
FMSL 8
AMST 9
GND 10
SEEK 11
TUN+B 12
AM+B 13
AMIFC 14
VCO GND 15
VCO 16
AMSL 17
FMTV 18
AMTV 19
FM+B 20
LOCH 21
LOCL 22
GND 23
AMANT 24
L501
D501
MA151WK-HF
AM IF AMP
Q501 2SC3295
VCO AMP
Q502 2SC2712
IC501
LC72140M
TUNER PLL
X501 4.5MHz
AM LOOP FILTER
FM LOOP FILTER
Q504 MA3027H
Q505 2SK208
Q508 2SC2712
Q509 2SK208
Q771 2SC2712
Q772 DTC124EK
Q773 2SC2712
D772 MTZ4R7B
VR771
Q451 2SC2712
Q452 2SC2712
Q453 DTC314TK
Q454 DTC314TK
Q455 DTC314TK
Q456 DTC314TK
Q457 2SA1162
TUNER MUTE
TMUTE
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +2.5dBs
CD +2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
Q901 2SD2396
Q902 DTA114EK
Q903 DTC114EK
D904 HZS9LC3
VDD1
REMIN
AM+B
FM+B
TUN+B
TEMP
TH601
RDS DECODER
RECIV
IC771
CWV1044
30 RECEIVE
29 CORR
28 ERROR
27 DK
26 RLOCK
25 SK
24 SL(FM)
23 SD
22 FL CHK
21 SL CHK
20 BPF OUT
19 FM 5V(VCC)
18 COMP
17 GND
VDD 1
GND 2
RDSRDY 3
RDSEN 4
RDSCK 5
RDSDT 7 6
RDSDT 6 7
RDSDT 5 8
RDSDT 4 9
RDSSEL 10
RDSRST 11
SCHK 12
TUNSEL 13
D771 1SS133
IC601
PD448
SYSTEM C
IB601 CWW1336
IB602 CWW1337
CN601
YLCD
DSENS
KYDT
DPDT
VDD
ILM+B
ILMGND
GND
NC
TO KEY BOARD UNIT CN901

NOTE:
Symbol indicates a
No differentiation
discrete resistors.

Symbol indicates a
No differentiation
discrete capacitors

Decimal points for resi
and capacitor fixed val
are expressed as:
2.2→2R2
0.022→R022

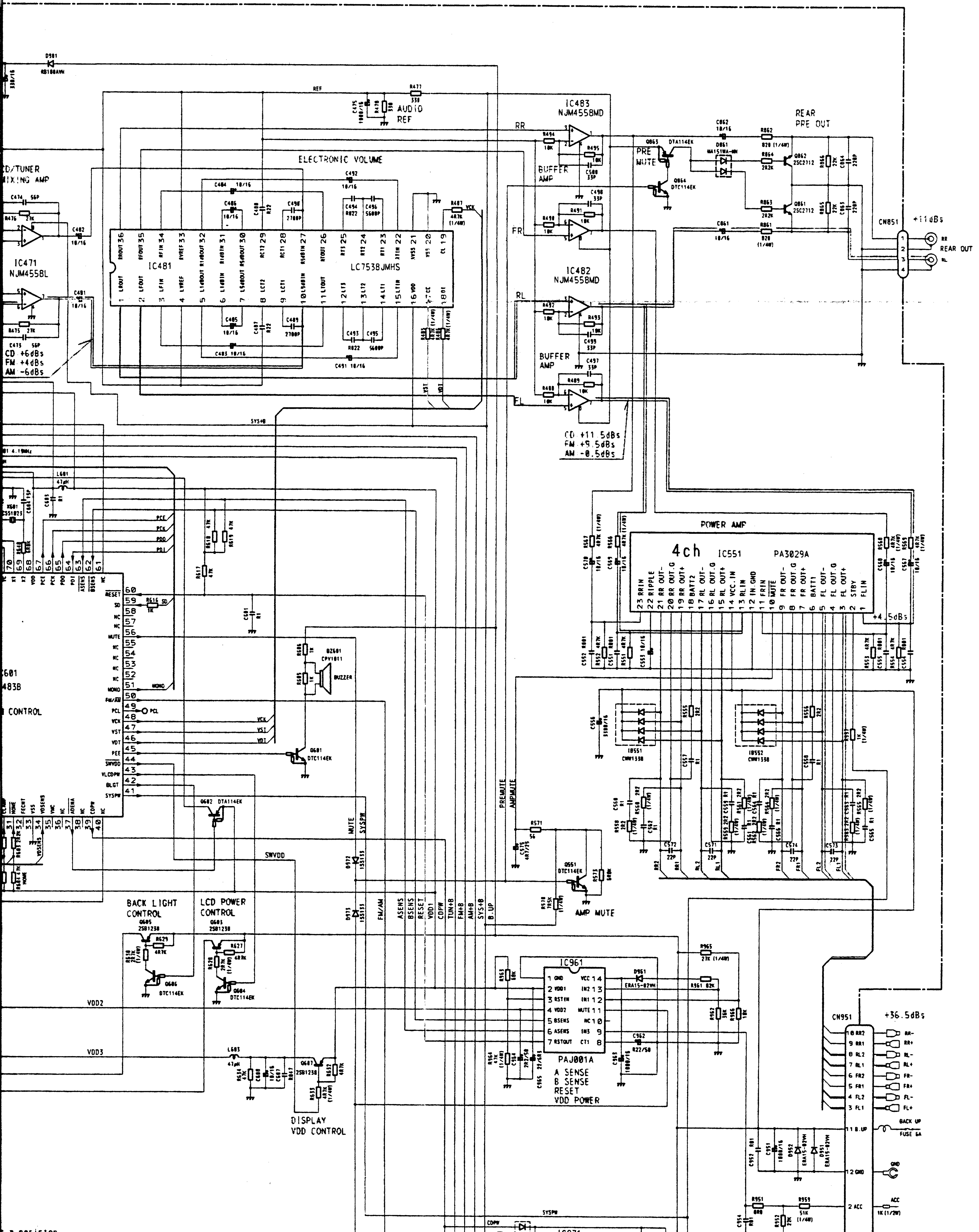

FROM CONTROL UNIT CN1701
CD POWER SUPPLY
CN651
CD +2.5dBs
CD/TUNER MIXING AMP
IC471 NJM4558L
TUNER MUTE
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +6dBs
FM +4dBs
AM -6dBs
AUDIO REF
ELECTRONIC VOLUME
IC481
LC7538JMHS
IC483 NJM4558MD
BUFFER AMP
IC482 NJM4558MD
BUFFER AMP
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
RDS DECODER
IC771 CWV1044
IC601 PD4483B SYSTEM CONTROL
BZ601 CPV1011 BUZZER
BACK LIGHT CONTROL
LCD POWER CONTROL
DISPLAY VDD CONTROL
AMP MUTE
IC961 PAJ001A
A SENSE
B SENSE
RESET
VDD POWER
IC971 PA2023A
TUNER/SYSTEM +B POWER SUPPLY
CN601
TO KEY BOARD UNIT CN901

NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


A
B
C
D
E
F
D981
RB100AVH
REF
R477
330
AUDIO
REF
IC483
NJM4558MD
RR
FR
RL
FL
REAR
PRE OUT
PRE
MUTE
BUFFER
AMP
Q863
DTA114EK
Q864
DTC114EK
D861
MA151WA-WH
Q862
2SC2112
Q861
2SC2112
C862
C861
R862
R864
R863
R861
CN851
+11dBs
RR
REAR OUT
RL
IC482
NJM4558MD
BUFFER
AMP
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
ELECTRONIC VOLUME
IC481
LC7538JMHS
CD/TUNER
MIXING AMP
IC471
NJM4558L
CD +6dBs
FM +4dBs
AM -6dBs
SYS+B
L601
47μH
X601
CSS1823
PCE
PCK
PDO
PDI
C601
483B
CONTROL
RESET
MUTE
MONO
FM/AM
PCL
VCK
VST
VDT
PEE
SWVDD
VLCDPW
BLGT
SYSPW
BZ601
CPV1011
BUZZER
Q601
DTC114EK
Q602
DTA114EK
SWVDD
MUTE
SYSPW
PREMUTE
AMPMUTE
BACK LIGHT
CONTROL
Q605
2SB1238
Q606
DTC114EK
LCD POWER
CONTROL
Q603
2SB1238
Q604
DTC114EK
VDD2
VDD3
L603
47μH
Q607
2SB1238
DISPLAY
VDD CONTROL
FM/AM
ASENS
BSENS
RESET
VDD1
CDPW
TUN+B
FM+B
AM+B
SYS+B
B.UP
R571
56
Q551
DTC114EK
AMP MUTE
POWER AMP
4ch
IC551
PA3029A
+4.5dBs
IC551
CWM1338
IC552
CWM1338
RR2
RL2
RL1
FR2
FR1
FL2
FL1
IC961
PAJ001A
A SENSE
B SENSE
RESET
VDD POWER
D961
ERA15-02VH
R965
CN951
+36.5dBs
RR-
RR+
RL-
RL+
FR-
FR+
FL-
FL+
B.UP
BACK UP
FUSE 6A
GND
ACC
1K (1/2W)
D952
ERA15-02VH
D951
ERA15-02VH
R951
R959
51K
B.REM
B REMOTE
FUSE 0.5A
B REMOTE
Q956
2SB1238
D957
ERA15-02VH
Q957
DTC114EK
D956
ERA15-10VH
SYSPW
CDPW
FM/AM
D971
MA151WK-WT
IC971
PA2023A
TUNER/SYSTEM +B
POWER SUPPLY
STBY
PREVCC
PWVCC
PWGND
PREGND
SELECT

s a resistor.
on is made between chip resistors and
ors.

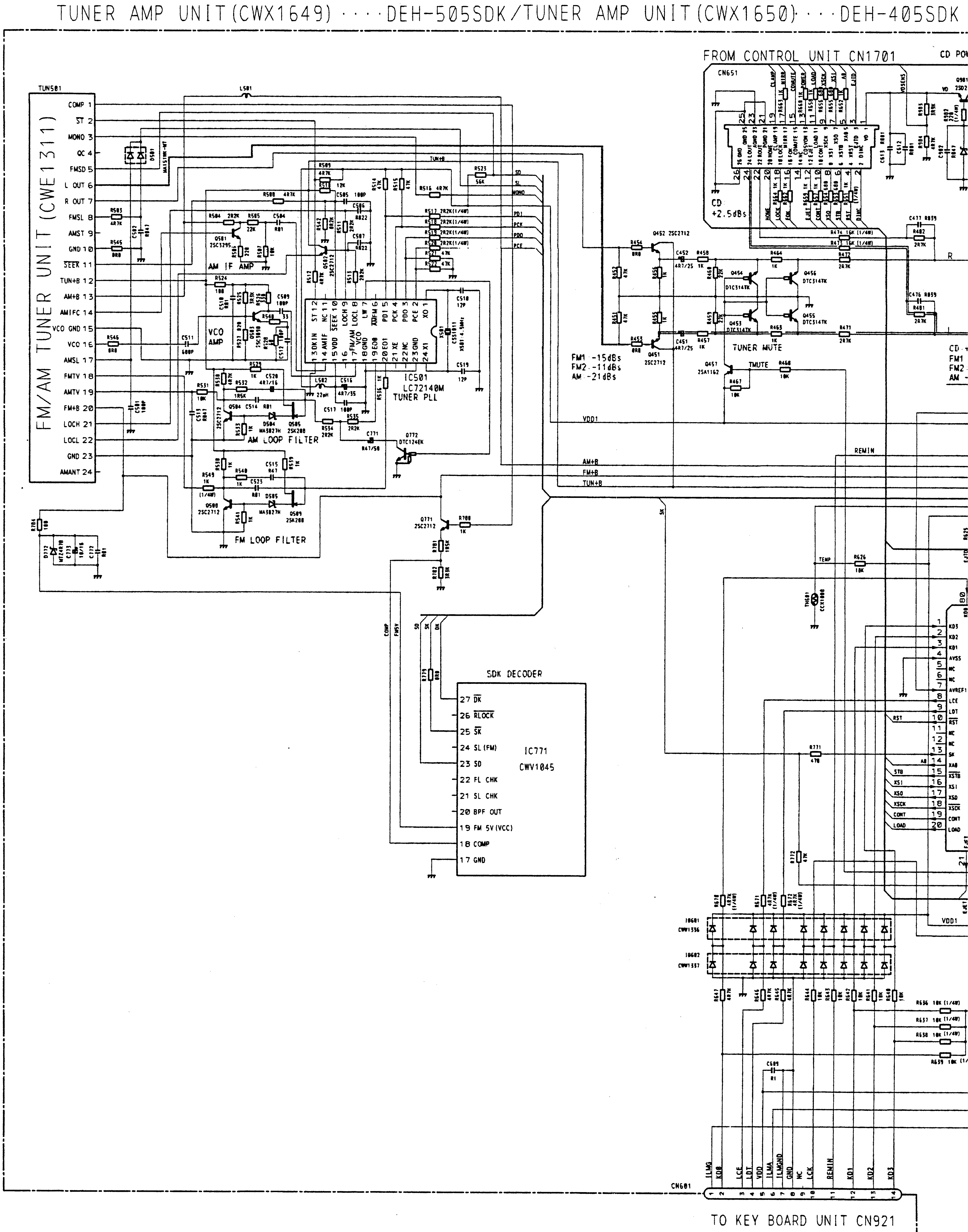
s a capacitor.
on is made between chip capacitors and
tors.

esistor
values

Fig.9

4.2 TUNER AMP UNIT(DEH-505SDK,405SDK)

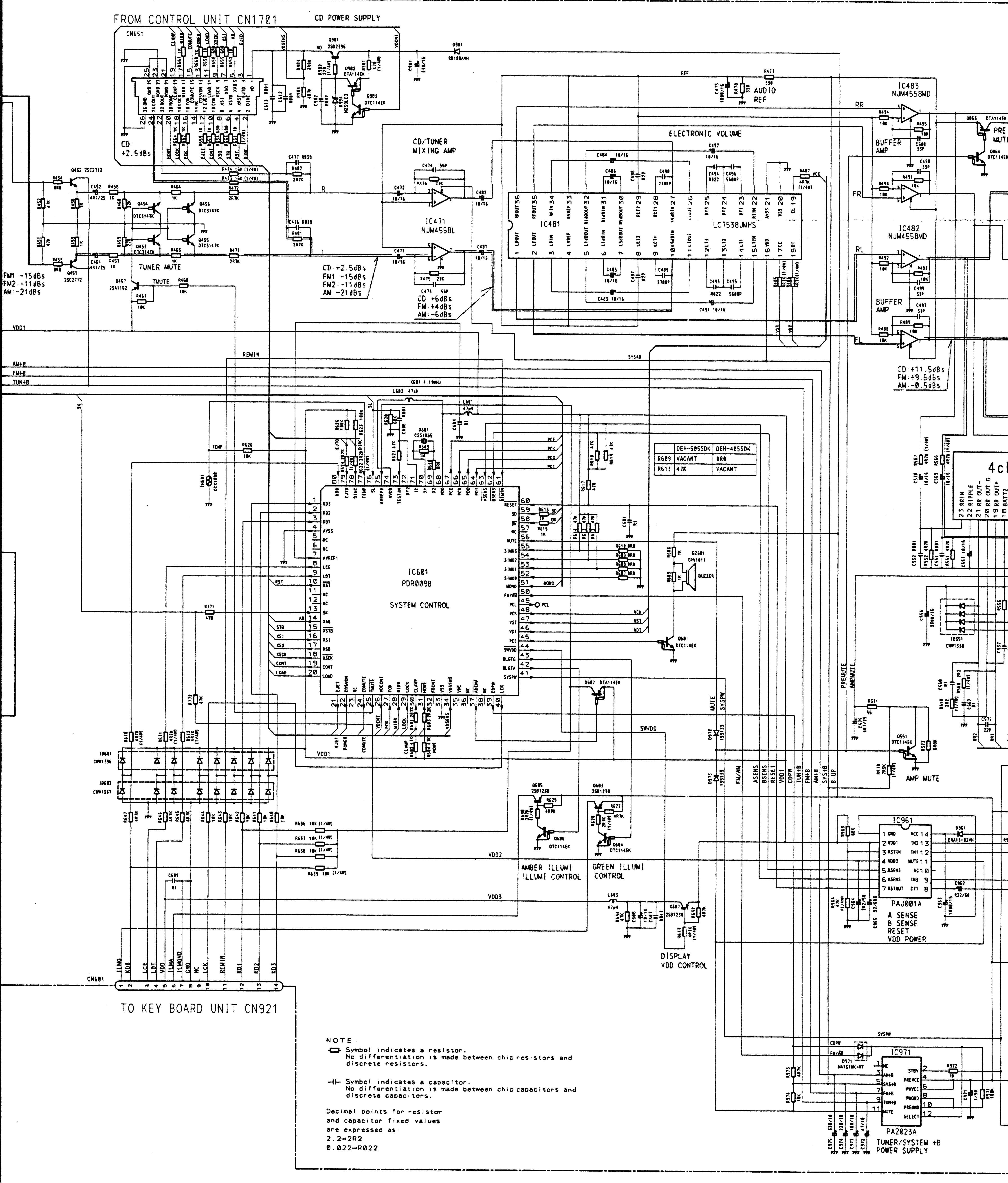
● **Circuit Diagram**


TUNER AMP UNIT(CWX1649)····DEH-505SDK/TUNER AMP UNIT(CWX1650)···DEH-405SDK
FM/AM TUNER UNIT (CWE1311)
TUN501
COMP 1
ST 2
MONO 3
QC 4
FMSD 5
L OUT 6
R OUT 7
FMSL 8
AMST 9
GND 10
SEEK 11
TUN+B 12
AM+B 13
AMIFC 14
VCO GND 15
VCO 16
AMSL 17
FMTV 18
AMTV 19
FM+B 20
LOCH 21
LOCL 22
GND 23
AMANT 24
AM IF AMP
VCO AMP
IC501
LC72140M
TUNER PLL
AM LOOP FILTER
FM LOOP FILTER
FROM CONTROL UNIT CN1701
CN651
CD
+2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
TUNER MUTE
TMUTE
VDD1
AM+B
FM+B
TUN+B
REMIN
SDK DECODER
IC771
CWV1045
27 DK
26 RLOCK
25 SK
24 SL(FM)
23 SD
22 FL CHK
21 SL CHK
20 BPF OUT
19 FM 5V(VCC)
18 COMP
17 GND
IC601
CWV1336
IC602
CWV1337
CN601
TO KEY BOARD UNIT CN921
CD POW

Pinoneer

DEH - 605 RDS

R AMP UNIT(CWX1650)···DEH-405SDK



FROM CONTROL UNIT CN1701
CN651
CD POWER SUPPLY
CD +2.5dBs
FM1 -15dBs
FM2 -11dBs
AM -21dBs
TUNER MUTE
CD/TUNER MIXING AMP
IC471 NJM4558L
CD +2.5dBs FM1 -15dBs FM2 -11dBs AM -21dBs
CD +6dBs FM +4dBs AM -6dBs
ELECTRONIC VOLUME
IC481 LC7538JMHS
AUDIO REF
IC483 NJM4558MD
BUFFER AMP
PRE MUTE
IC482 NJM4558MD
CD +11.5dBs FM +9.5dBs AM -0.5dBs
IC601 PDR009B SYSTEM CONTROL
BUZZER
AMBER ILLUMI ILLUMI CONTROL
GREEN ILLUMI CONTROL
DISPLAY VDD CONTROL
CN601
TO KEY BOARD UNIT CN921
AMP MUTE
IC961 PAJ001A
A SENSE B SENSE RESET VDD POWER
IC971 PA2023A
TUNER/SYSTEM +B POWER SUPPLY
4c

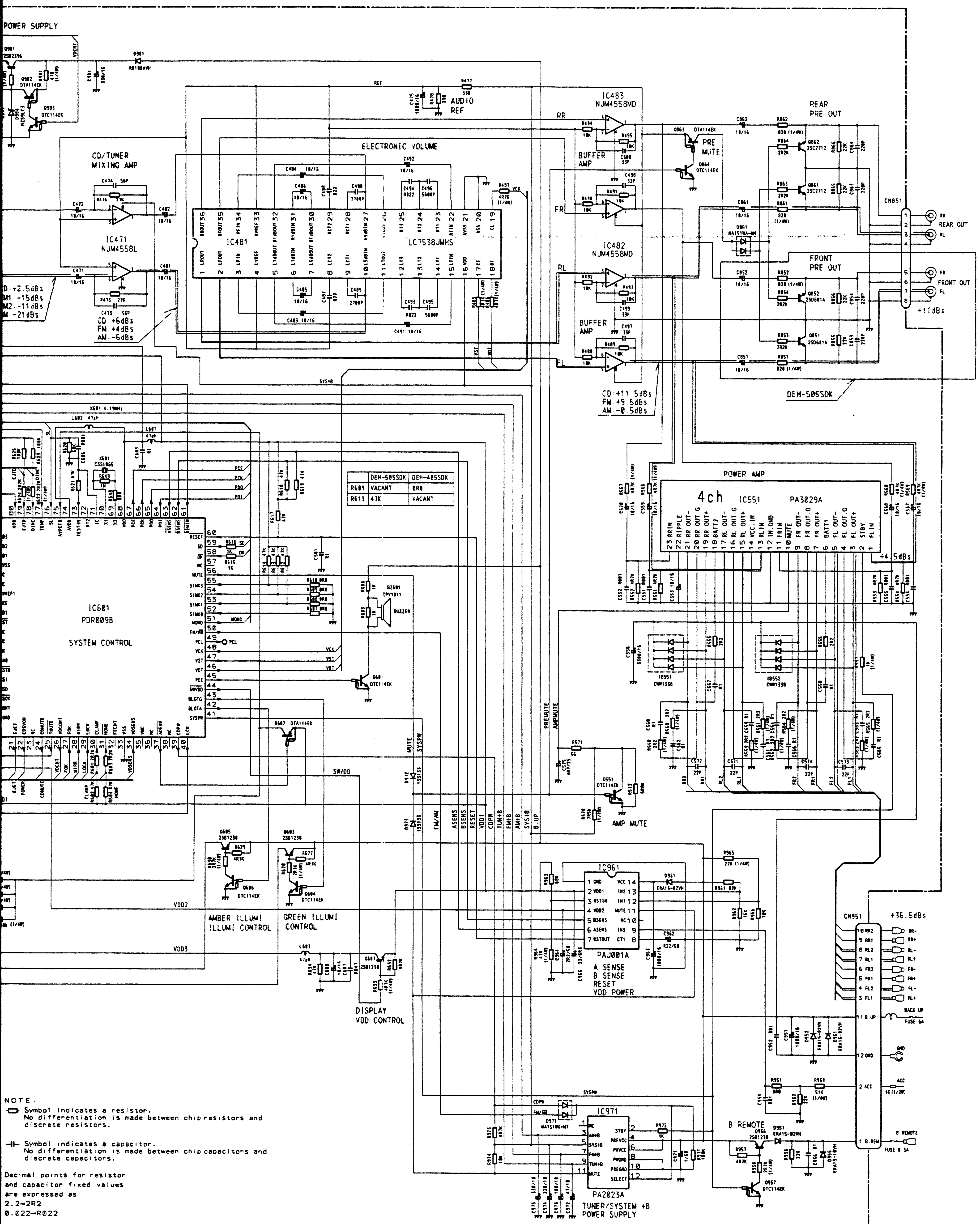
	DEH-505SDK	DEH-405SDK
R609	VACANT	0R0
R613	47K	VACANT

NOTE:

⊏⊐ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


POWER SUPPLY
CD/TUNER MIXING AMP
IC471 NJM4558L
ELECTRONIC VOLUME
IC481 LC7538JMHS
AUDIO REF
IC483 NJM4558MD
BUFFER AMP
PRE MUTE
IC482 NJM4558MD
REAR PRE OUT
FRONT PRE OUT
CN851
REAR OUT
FRONT OUT
+11dBs
DEH-505SDK
CD +6dBs
FM +4dBs
AM -6dBs
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
POWER AMP
4ch IC551 PA3029A
+4.5dBs
IC601 PDR009B
SYSTEM CONTROL
BUZZER
AMP MUTE
AMBER ILLUMI ILLUMI CONTROL
GREEN ILLUMI CONTROL
DISPLAY VDD CONTROL
IC961 PAJ001A
A SENSE B SENSE RESET VDD POWER
IC971 PA2023A
TUNER/SYSTEM +B POWER SUPPLY
B REMOTE
CN951
+36.5dBs
BACK UP FUSE 6A
GND
ACC
B REMOTE FUSE 0.5A

	DEH-505SDK	DEH-405SDK
R609	VACANT	0R0
R613	47K	VACANT

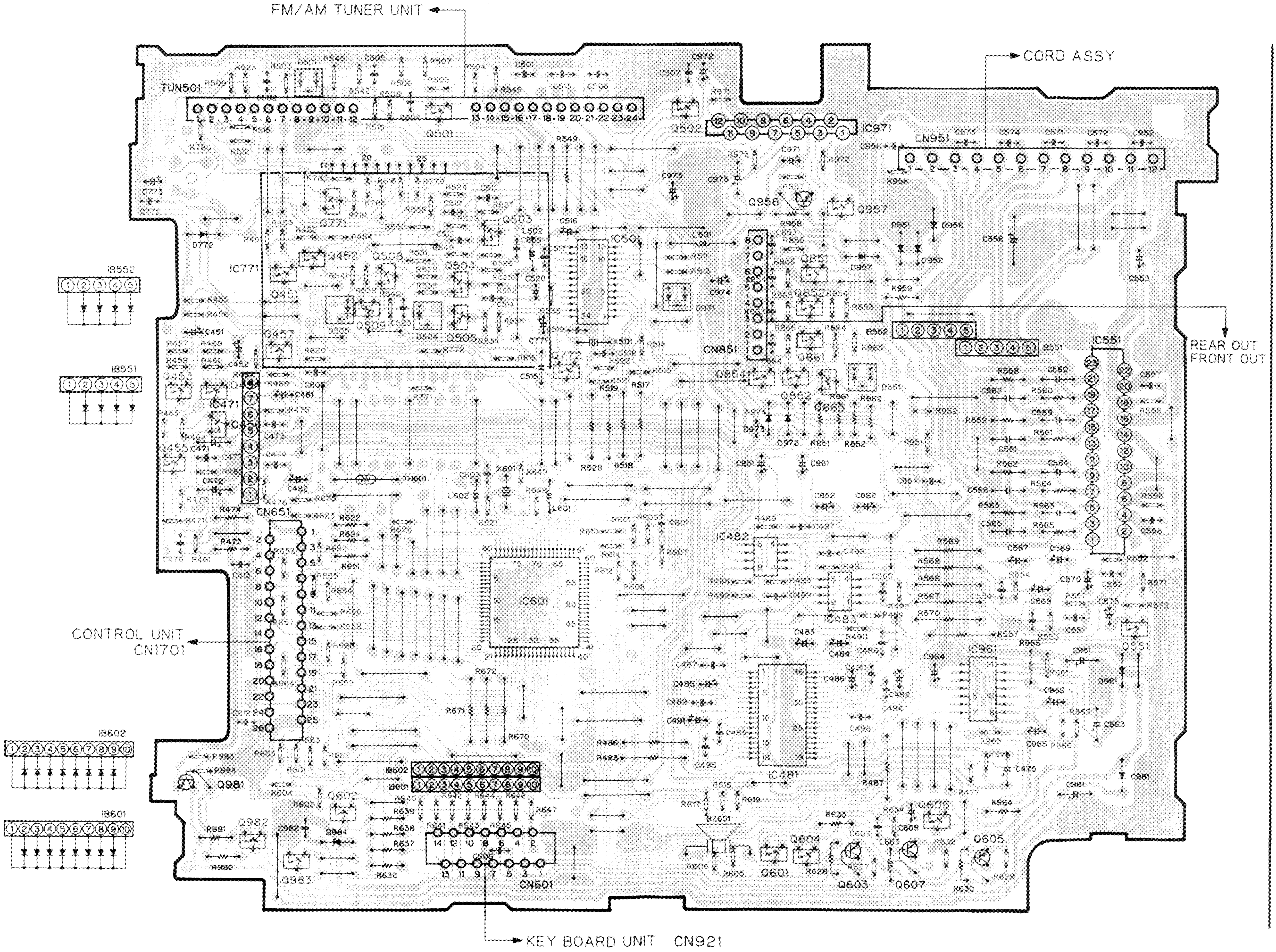
NOTE:

- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022

Fig.10

● **Connection Diagram**


FM/AM TUNER UNIT
CORD ASSY
TUN501
1 2 3 4 5 6 7 8 9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24
Q501
Q502
IC971
CN951
1 2 3 4 5 6 7 8 9 10 11 12
Q956
Q957
Q771
Q503
IC501
L501
L502
Q452
Q508
Q504
IC771
Q451
Q509
Q505
Q457
Q772
Q851
Q852
CN851
Q861
Q864
Q862
Q863
IB552
IB551
IC551
REAR OUT
FRONT OUT
Q453
IC471
Q455
TH601
X601
CN651
IC601
IC482
IC483
IC961
IC481
Q551
CONTROL UNIT
CN1701
IB602
IB601
Q981
Q982
Q983
Q602
Q606
Q604
Q605
Q601
Q603
Q607
BZ601
CN601
KEY BOARD UNIT CN921

IC, Q

A
Q501 Q502
IC971
Q771 Q956 Q957
Q503
Q452 IC501
IC771 Q451 Q508
Q504 Q851
Q509 Q505 Q852

B
Q861
Q457 Q772
Q864 Q862 Q863
Q453 Q454
Q456
Q455 IC551
IC471
IC482

C
IC601 IC483
Q551
IC961
IC481
Q981
Q602 Q606

D
Q982
Q983 Q601 Q604
Q603 Q607 Q605

Fig.1 1

2-21

2-22

1 2 3 4 5 6

4.3 TUNER AMP UNIT(DEH-505,405)

- **Connection Diagram**

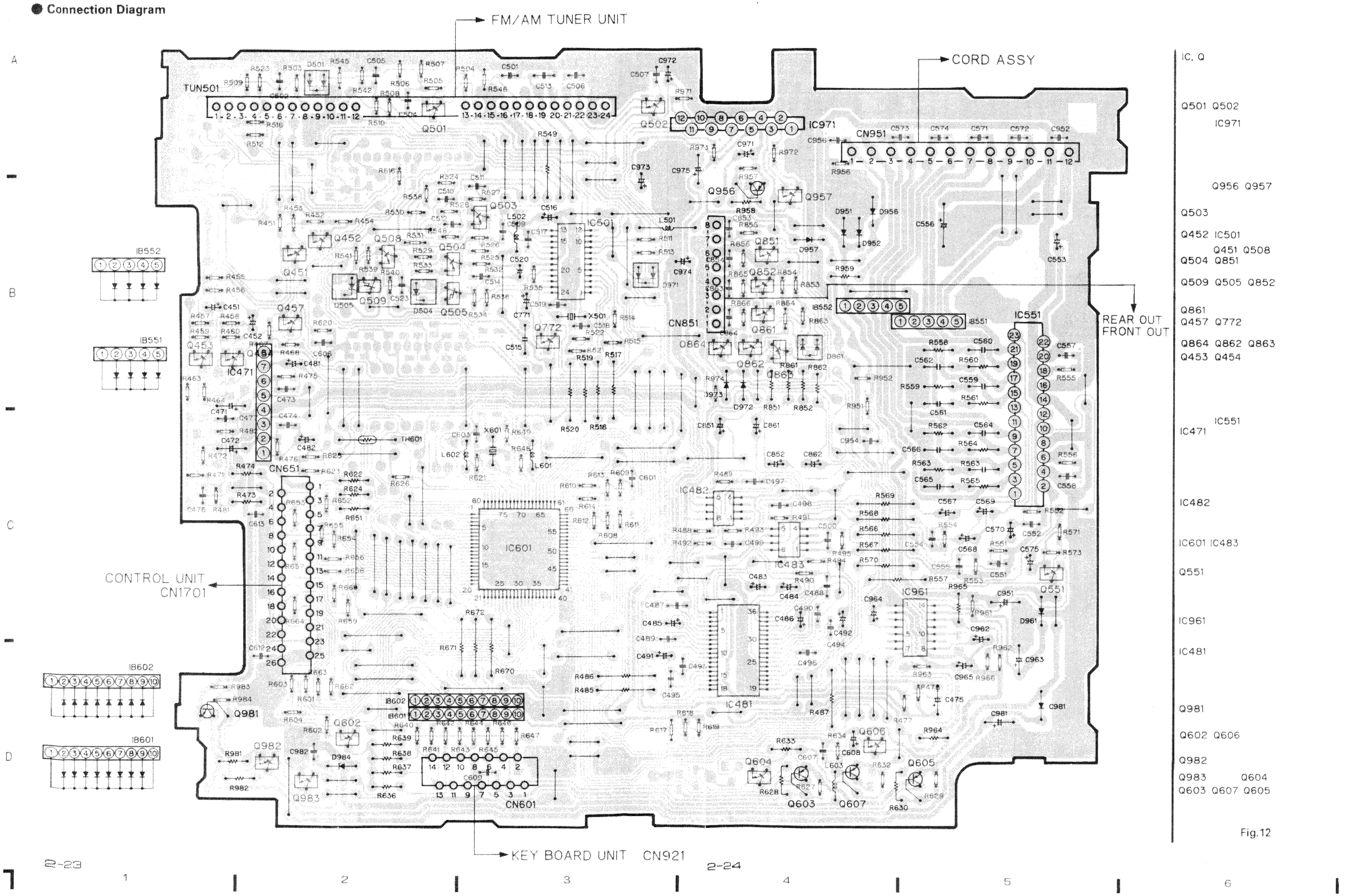
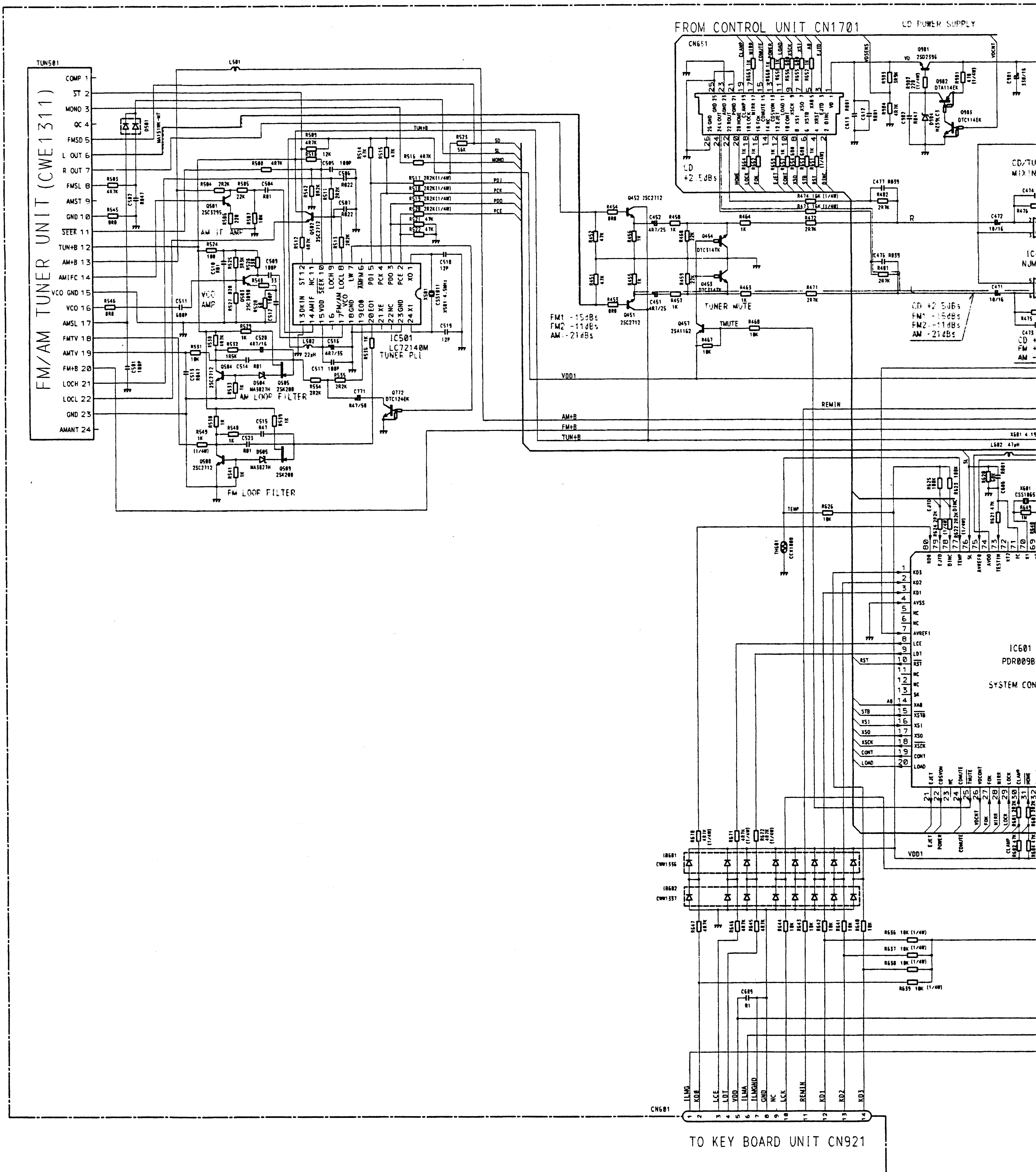

FM/AM TUNER UNIT
CORD ASSY
TUN501
CN951
IC971
CN851
IC501
IC551
IC471
IC482
IC483
IC601
IC961
IC481
CN651
CN601
IB552
IB551
IB602
IB601
REAR OUT
FRONT OUT
CONTROL UNIT
CN1701
KEY BOARD UNIT CN921
A
B
C
D
1
2
3
4
5
6
IC, Q
Q501 Q502
IC971
Q956 Q957
Q503
Q452 IC501
Q451 Q508
Q504 Q851
Q509 Q505 Q852
Q861
Q457 Q772
Q864 Q862 Q863
Q453 Q454
IC551
IC471
IC482
IC601 IC483
Q551
IC961
IC481
Q981
Q602 Q606
Q982
Q983 Q604
Q603 Q607 Q605

Fig.12

● Circuit Diagram

TUNER AMP UNIT(CWX1651)····DEH-505 /TUNER AMP UNIT(CWX1652)····DEH-405

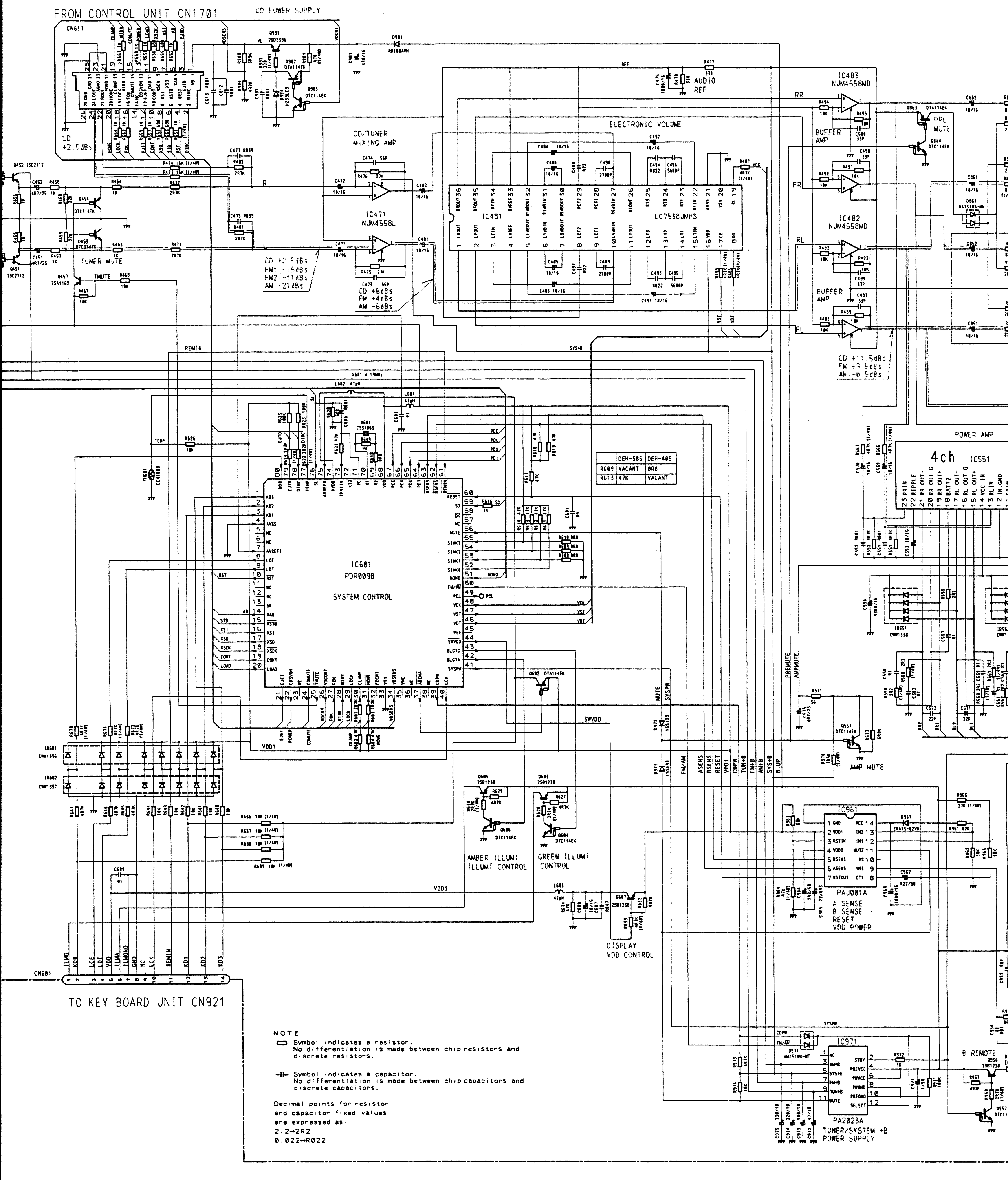

FROM CONTROL UNIT CN1701
CD POWER SUPPLY
CN651
TUN501
FM/AM TUNER UNIT (CWE1311)
COMP 1
ST 2
MONO 3
QC 4
FMSD 5
L OUT 6
R OUT 7
FMSL 8
AMST 9
GND 10
SEEK 11
TUN+B 12
AM+B 13
AMIFC 14
VCO GND 15
VCO 16
AMSL 17
FMTV 18
AMTV 19
FM+B 20
LOCH 21
LOCL 22
GND 23
AMANT 24
L501
AM IF AMP
VCO AMP
AM LOOP FILTER
FM LOOP FILTER
IC501
LC72140M
TUNER PLL
TUNER MUTE
TMUTE
FM1 -15dBs
FM2 -11dBs
AM -21dBs
CD +2.5dBs
VDD1
REMIN
AM+B
FM+B
TUN+B
IC601
PDR009B
SYSTEM CON
CN601
TO KEY BOARD UNIT CN921
ILMG
KD0
LCE
LDT
VDD
ILMA
ILMGND
GND
NC
LCK
REMIN
KD1
KD2
KD3
TEMP
TH601
IB601
IB602

NOTE
Symbol indicates a
No differentiation
discrete resistors.

Symbol indicates a
No differentiation
discrete capacitors

Decimal points for resis
and capacitor fixed val
are expressed as:
2.2→2R2
0.022→R022

IT(CWX1652)····DEH-405


FROM CONTROL UNIT CN1701
CD POWER SUPPLY
CN651
CD
+2.5dBs
CD/TUNER
MIXING AMP
IC471
NJM4558L
TUNER MUTE
TMUTE
CD +2.5dBs
FM1 +15dBs
FM2 +11dBs
AM +21dBs
CD +6dBs
FM +4dBs
AM -6dBs
AUDIO
REF
ELECTRONIC VOLUME
IC481
LC75381JMHS
IC483
NJM4558MD
BUFFER
AMP
PRE
MUTE
IC482
NJM4558MD
RR
FR
RL
FL
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
REMIN
SYS+B
IC601
PDR009B
SYSTEM CONTROL
POWER AMP
4ch
IC551
AMP MUTE
AMBER ILLUMI
ILLUMI CONTROL
GREEN ILLUMI
CONTROL
DISPLAY
VDD CONTROL
IC961
PAJ001A
A SENSE
B SENSE
RESET
VDD POWER
IC971
PA2023A
TUNER/SYSTEM +B
POWER SUPPLY
B REMOTE
CN681
TO KEY BOARD UNIT CN921

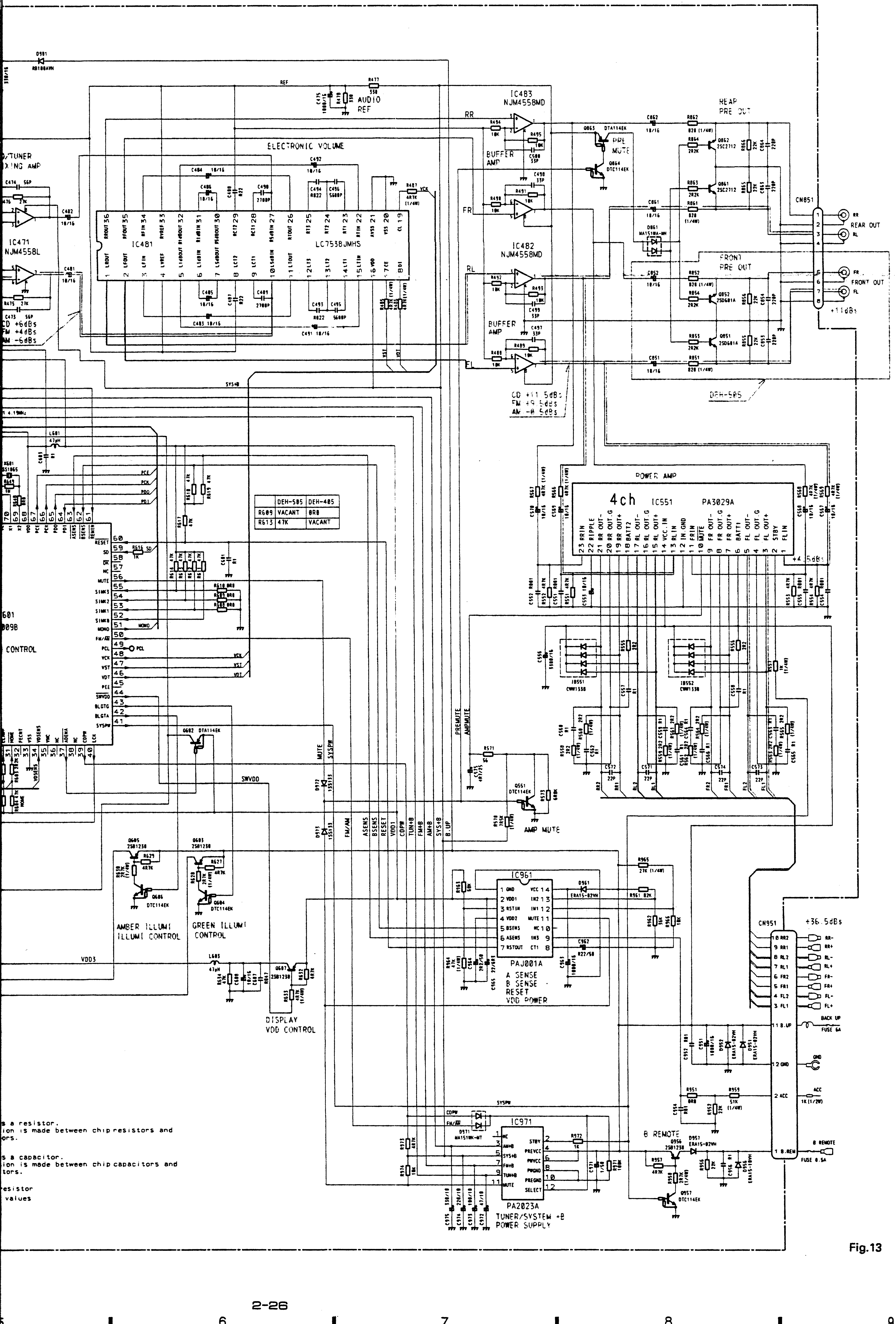
	DEH-505	DEH-405
R609	VACANT	0R0
R613	47K	VACANT

NOTE

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022


D981
RB100AVH
REF
R477
AUDIO
REF
IC483
NJM4558MD
RR
FR
RL
FL
BUFFER
AMP
IC482
NJM4558MD
ELECTRONIC VOLUME
IC481
LC75380JMHS
/TUNER
XING AMP
IC471
NJM4558L
CD +6dBs
FM +4dBs
AM -6dBs
Q863 DTA114EK
PRE
MUTE
Q864
DTC114EK
REAR
PRE OUT
Q862
2SC2712
Q861
2SC2712
CN851
REAR OUT
FRONT OUT
FRONT
PRE OUT
D861
MA151WA-WH
Q852
2SD601A
Q851
2SD601A
+11dBs
DEH-505
CD +11.5dBs
FM +9.5dBs
AM -0.5dBs
POWER AMP
4ch
IC551
PA3029A
+4.5dBs
IB551
CWM1338
IB552
CWM1338
RR2
RR1
RL2
RL1
FR2
FR1
FL2
FL1
VCK
VST
VDT
SYS+B
L601
47μH
X601
PCE
PCK
PDO
PDI
IC601
PE5009B
CONTROL
RESET
SD
DX
NC
MUTE
SIMK3
SIMK2
SIMK1
SIMK0
MONO
FM/AM
PCL
PEE
SWVDD
BLGTG
BLGTA
SYSPW
Q602 DTA114EK
SWVDD
MUTE
SYSPW
PREMUTE
AMPMUTE
R571
Q551
DTC114EK
AMP MUTE
FM/AM
ASENS
BSENS
RESET
VDD1
CDPW
TUN+B
FM+B
AM+B
SYS+B
B.UP
Q605
2SB1238
Q606
DTC114EK
Q603
2SB1238
Q604
DTC114EK
AMBER ILLUMI
ILLUMI CONTROL
GREEN ILLUMI
CONTROL
VDD3
L603
47μH
Q607
2SB1238
DISPLAY
VDD CONTROL
IC961
D961
ERA15-02VH
PAJ001A
A SENSE
B SENSE
RESET
VDD POWER
R965
R961 82K
CN951
+36.5dBs
BACK UP
FUSE 6A
GND
ACC
1K (1/2W)
B REMOTE
FUSE 0.5A
D952
ERA15-02VH
D951
ERA15-02VH
R951
R955
51K
SYSPW
CDPW
FM/AM
D971
MA151WK-MT
IC971
PA2023A
TUNER/SYSTEM +B
POWER SUPPLY
R972
B REMOTE
Q956
2SB1238
D957
ERA15-02VH
Q957
DTC114EK
D956
ERA15-10VH

	DEH-505	DEH-405
R609	VACANT	0R8
R613	47K	VACANT

s a resistor.
ion is made between chip resistors and
ors.

s a capacitor.
ion is made between chip capacitors and
tors.

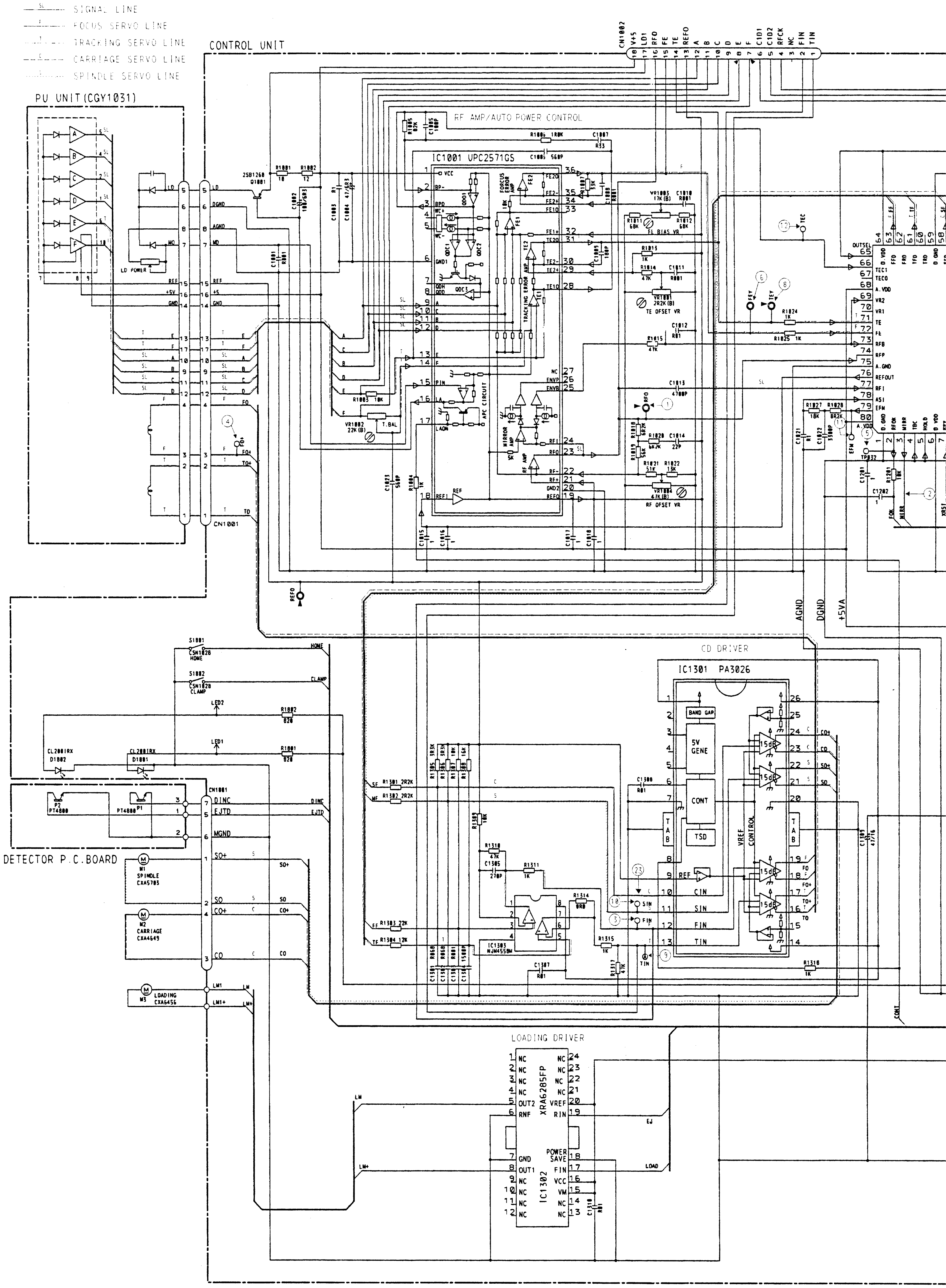
esistor
values

Fig.13

Pioneer

4.4 CD MECHANISM MODULE

● Circuit Diagram

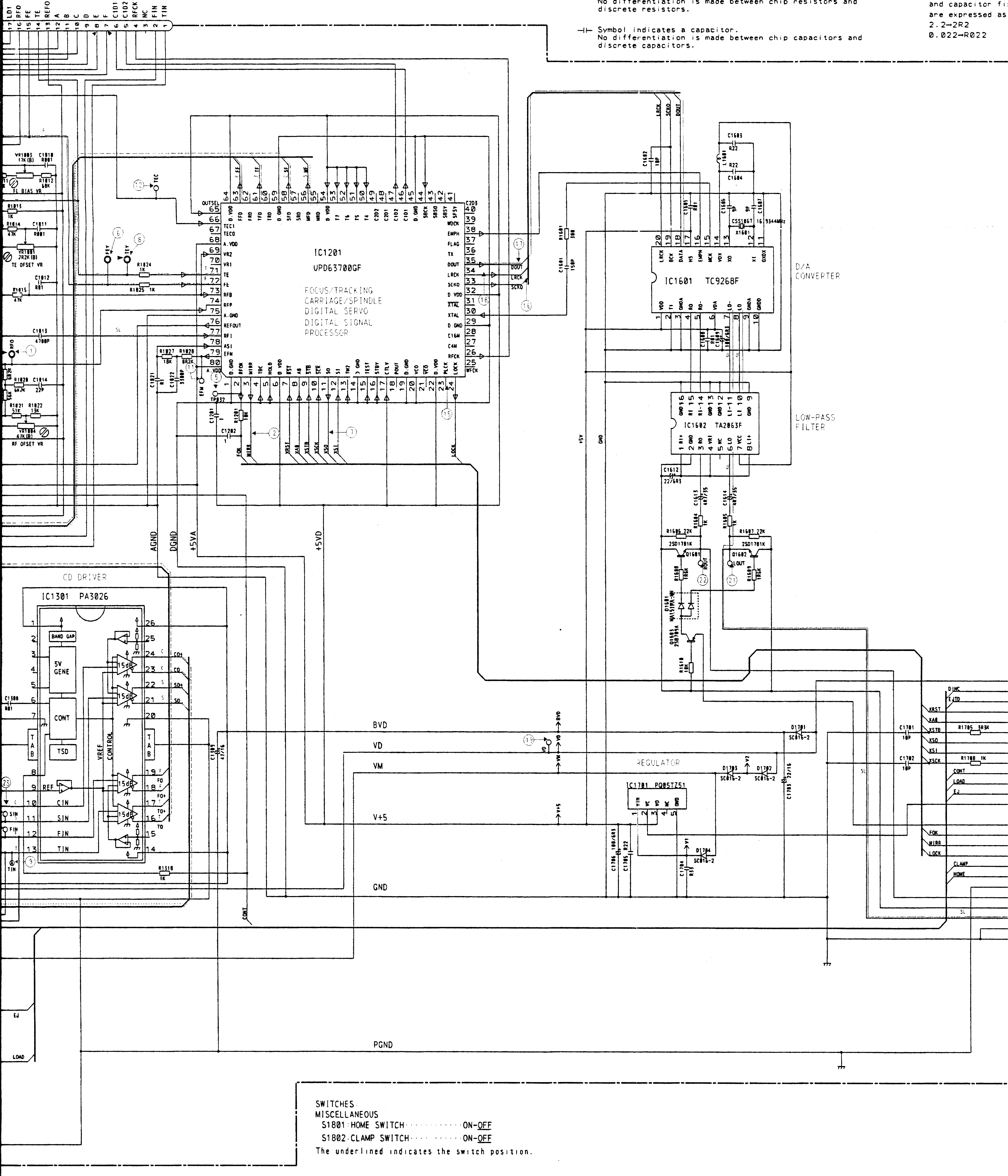

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
CONTROL UNIT
PU UNIT (CGY1031)
LD POWER
CN1001
CN1002
RF AMP/AUTO POWER CONTROL
IC1001 UPC2571GS
FE BIAS VR
TE OFSET VR
RF OFSET VR
T.BAL
APC CIRCUIT
MIRROR AMP
RF AMP
TRACKING ERROR AMP
FOCUS ERROR AMP
2SB1260 Q1001
REFO
AGND
DGND
+5VA
CD DRIVER
IC1301 PA3026
BAND GAP
5V GENE
CONT
TSD
VREF CONTROL
IC1303 NJM4558M
S1001 CSN1028 HOME
S1002 CSN1028 CLAMP
LED1
LED2
CL200IRX D1001
CL200IRX D1002
P1 PT4800
P2 PT4800
DETECTOR P.C.BOARD
M1 SPINDLE CXA5705
M2 CARRIAGE CXA4649
M3 LOADING CXA6456
LOADING DRIVER
IC1302 XRA6285FP
NC
OUT2
RNF
GND
OUT1
VREF
RIN
POWER SAVE
FIN
VCC
VM
OUTSEL
TEC
FEY
TEY
EFM
TP832
CONT
1
2
3
4
5

NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points f
and capacitor fi
are expressed as
2.2→2R2
0.022→R022



IC1201
UPD63700GF
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
IC1601 TC9268F
D/A
CONVERTER
IC1602 TA2063F
LOW-PASS
FILTER
CD DRIVER
IC1301 PA3026
BAND GAP
5V
GENE
CONT
TSD
VREF
CONTROL
REGULATOR
IC1701 PQ05TZ51
LD1
RFO
FE
TE
REFO
A
B
C
D
E
F
C1D1
C1D2
RFCK
NC
FIN
TIN
LRCK
SCKO
DOUT
FE BIAS VR
TE OFSET VR
RF OFSET VR
AGND
DGND
+5VA
+5VD
BVD
VD
VM
V+5
GND
PGND
CIN
SIN
FIN
TIN
REF
FOK
MIRR
XRST
XA0
XSTB
XSCK
XSO
XSI
LOCK
ROUT
LOUT
X1601
CSS1067 16.9344MHz
2SD1781K
Q1601
Q1602
D1701
D1702
D1703
D1704
SC016-2
DINC
EJTD
CONT
LOAD
EJ
CLAMP
HOME

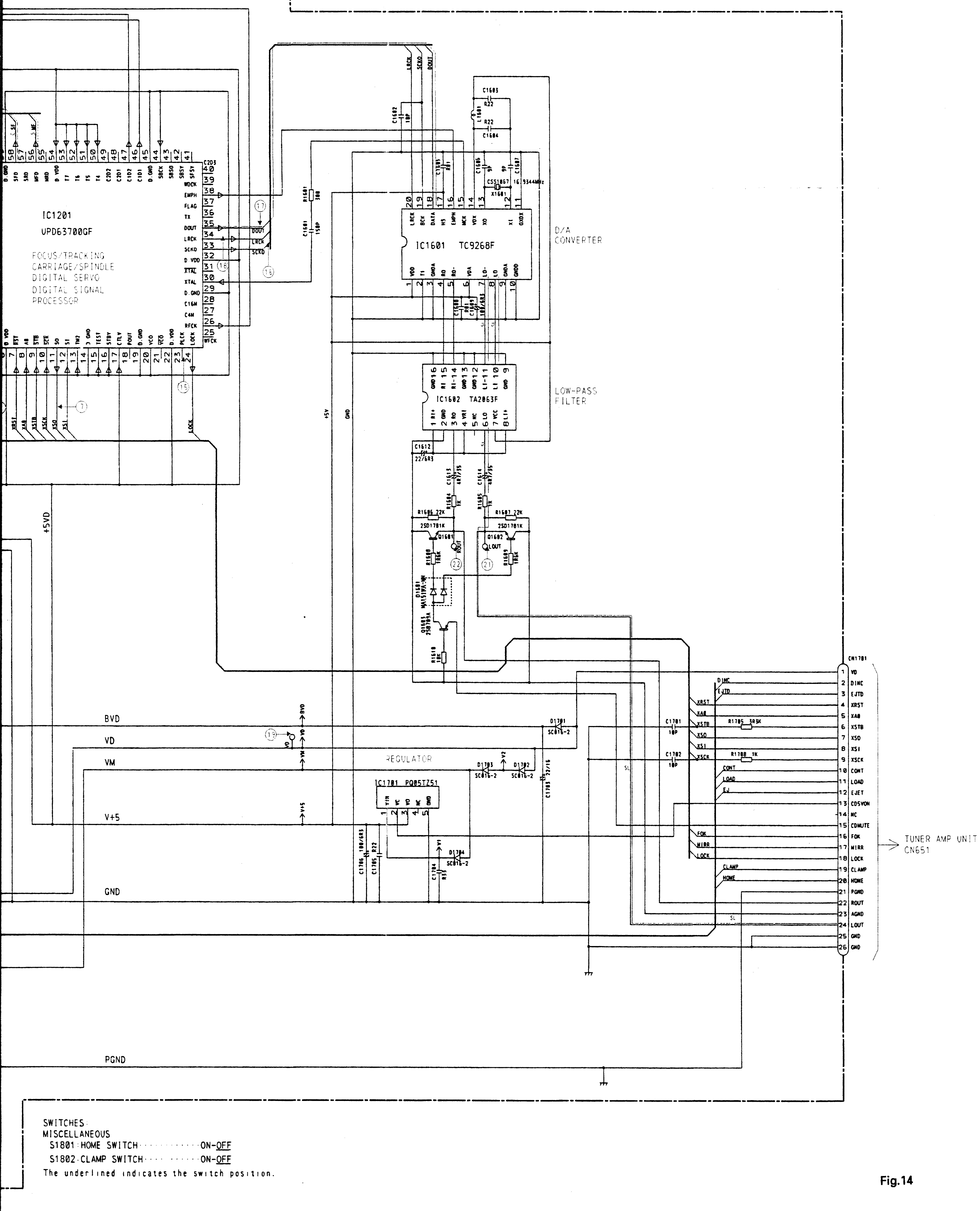
SWITCHES
MISCELLANEOUS
S1801 HOME SWITCH············ON-OFF
S1802 CLAMP SWITCH······· ·······ON-OFF
The underlined indicates the switch position.

NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

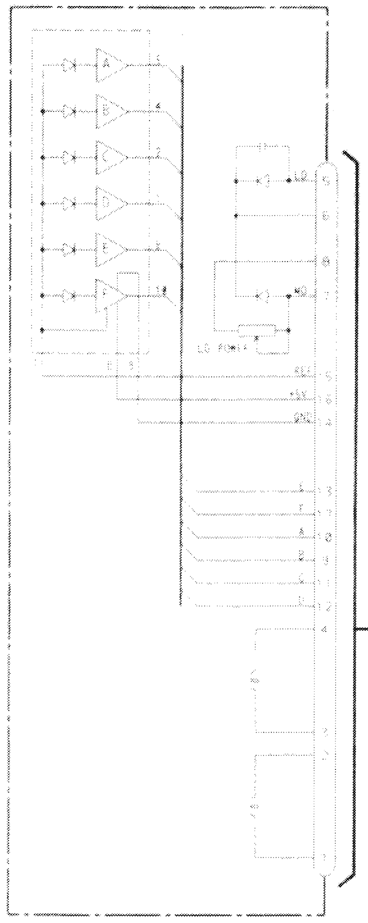
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


IC1201
UPD63700GF
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
IC1601 TC9268F
D/A
CONVERTER
IC1602 TA2063F
LOW-PASS
FILTER
REGULATOR
IC1701 PQ05TZ51
+5VD
+5V
GND
BVD
VD
VM
V+5
GND
PGND
CN1701
1 VD
2 DINC
3 EJTD
4 XRST
5 XA0
6 XSTB
7 XSO
8 XSI
9 XSCK
10 CONT
11 LOAD
12 EJET
13 CDSVON
14 NC
15 CDMUTE
16 FOK
17 MIRR
18 LOCK
19 CLAMP
20 HOME
21 PGND
22 ROUT
23 AGND
24 LOUT
25 GND
26 GND
TUNER AMP UNIT
CN651

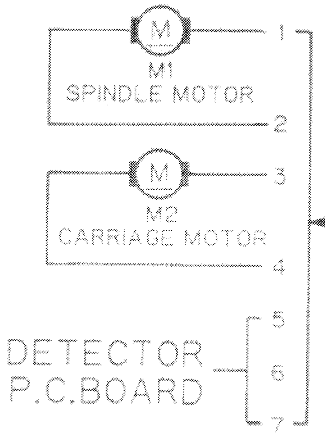
SWITCHES:
MISCELLANEOUS
S1801:HOME SWITCH··············ON-OFF
S1802:CLAMP SWITCH··············ON-OFF
The underlined indicates the switch position.

Fig.14

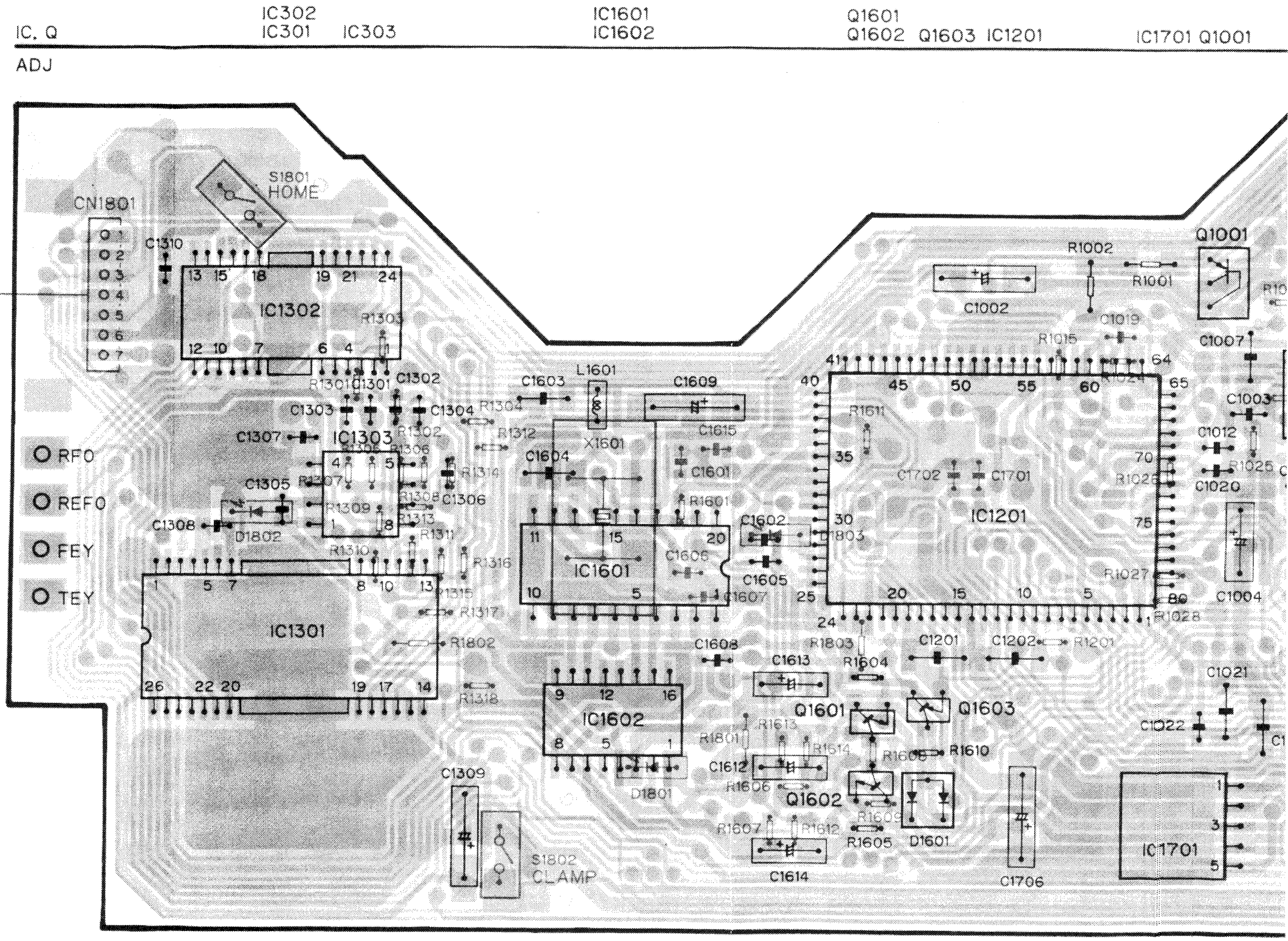
PU UNIT(CGY1031)


LD
MD
LD Power

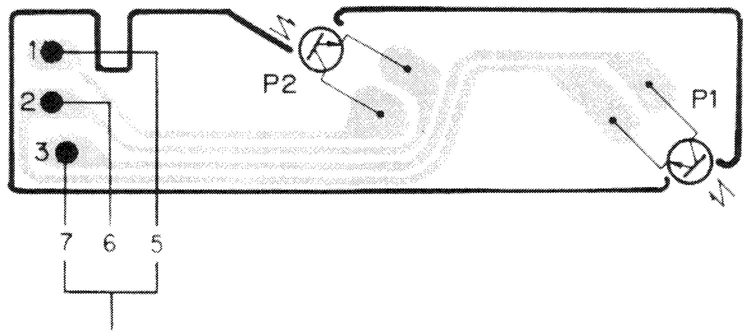
CONTROL UNIT
CN1001


M
M1
SPINDLE MOTOR
1
2
M
M2
CARRIAGE MOTOR
3
4
DETECTOR
P.C.BOARD
5
6
7

CONTROL UNIT


IC, Q
ADJ
IC302
IC301
IC303
IC1601
IC1602
Q1601
Q1602
Q1603
IC1201
IC1701
Q1001
CN1801
S1801
HOME
C1310
IC1302
R1303
R1301
C1301
C1302
C1303
C1304
C1307
IC1303
R1302
R1304
R1312
R1305
R1306
R1307
R1309
R1314
R1308
R1313
C1305
C1306
C1308
D1802
R1310
R1311
R1316
R1315
R1317
R1802
R1318
IC1301
RFO
REFO
FEY
TEY
C1603
L1601
C1609
C1604
X1601
C1615
C1601
R1601
C1602
C1605
C1606
C1607
IC1601
C1608
C1613
IC1602
R1801
R1613
R1614
C1612
R1606
D1801
C1309
S1802
CLAMP
R1607
R1612
C1614
R1803
R1604
Q1601
Q1603
R1608
R1610
Q1602
R1609
R1605
D1601
C1706
IC1201
R1611
C1702
C1701
C1201
C1202
R1201
R1002
R1001
Q1001
C1002
C1019
R1015
R1024
C1007
C1003
C1012
R1025
R1026
C1020
R1027
R1028
C1004
C1021
C1022
IC1701

DETECTOR P.C.BOARD


1
2
3
P2
P1
7
6
5

CONTROL UNIT
CN1801

CONTROL UNIT

IC, Q	IC302 IC301	IC303	IC1601 IC1602	Q1601 Q1602	Q1603 IC1201	IC1701 Q1001	IC1001
ADJ							VR1003 VR1002 VR1001 VR1004

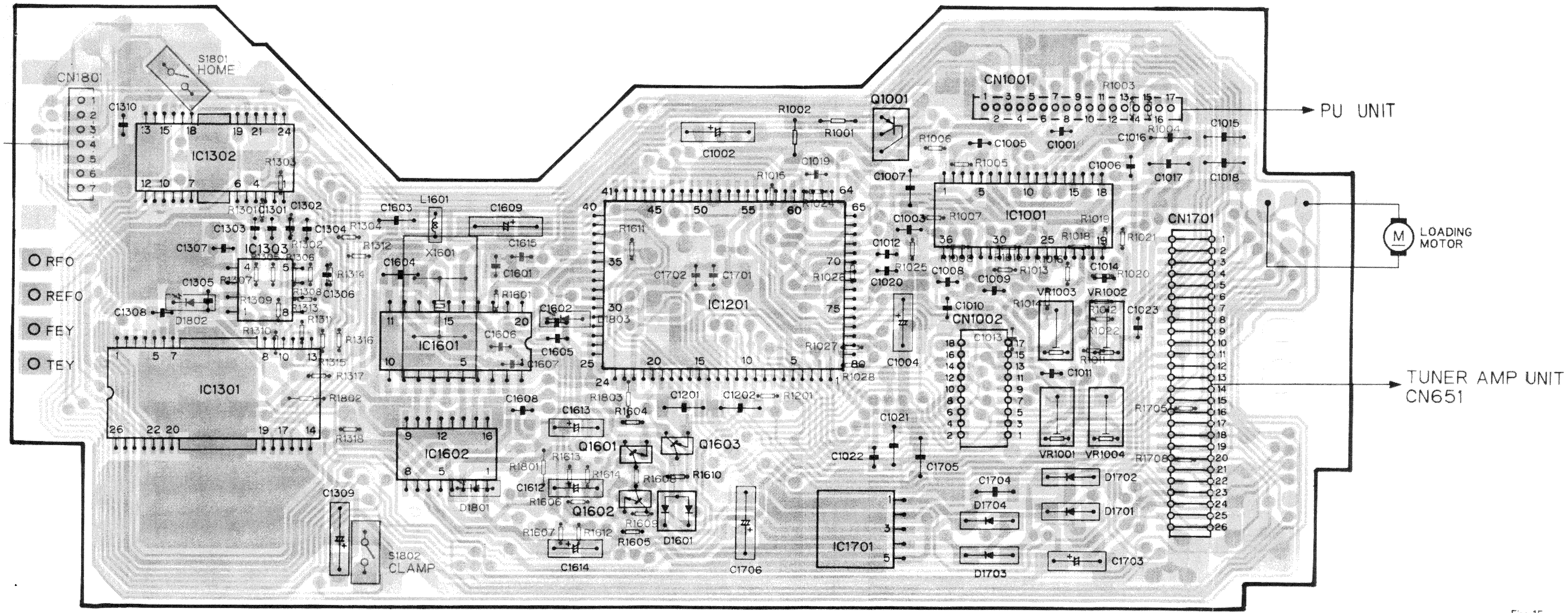
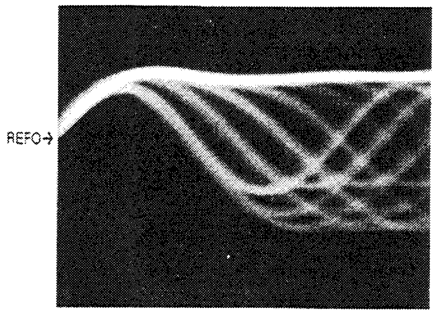

CN1801
1
2
3
4
5
6
7
S1801
HOME
C1310
IC1302
R1303
R1301
C1301
C1302
C1303
C1304
R1304
R1312
C1307
IC1303
R1302
R1306
R1305
R1314
C1305
R1307
R1308
C1306
R1309
R1313
C1308
D1802
R1311
R1310
R1316
R1315
R1317
IC1301
R1802
R1318
RFO
REFO
FEY
TEY
C1603
L1601
C1609
C1615
C1604
X1601
C1601
R1601
C1602
D1803
C1606
C1605
C1607
IC1601
C1608
IC1602
D1801
C1309
S1802
CLAMP
C1613
R1613
R1801
C1612
R1614
R1606
C1614
R1607
R1612
Q1601
Q1602
Q1603
R1803
R1604
R1608
R1610
R1609
R1605
D1601
C1706
IC1201
R1611
C1702
C1701
R1026
R1027
R1028
C1201
C1202
R1201
C1002
R1002
R1001
R1015
C1019
R1024
Q1001
C1007
C1003
C1012
C1020
R1025
C1004
C1021
C1022
C1705
IC1701
C1704
D1704
D1703
C1703
CN1001
R1003
R1004
PU UNIT
R1006
C1005
R1005
C1001
C1006
C1016
C1015
C1017
C1018
IC1001
R1007
R1019
R1018
R1021
C1008
C1009
R1013
R1016
C1014
R1020
C1010
R1014
VR1003
VR1002
C1023
CN1002
C1013
R1012
R1022
R1011
C1011
VR1001
VR1004
R1705
R1708
D1702
D1701
CN1701
LOADING MOTOR
M
TUNER AMP UNIT
CN651

Fig.15

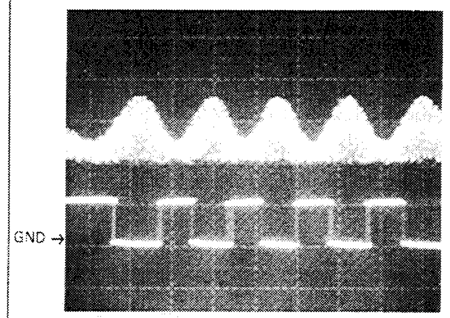
● Waveforms

Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO: 2.5V

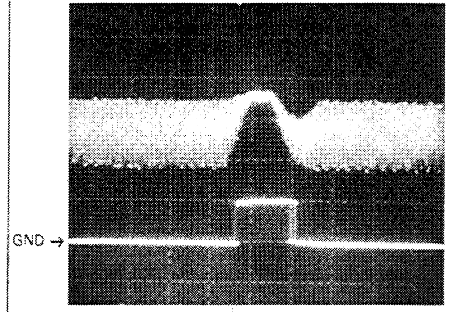
① RFO 0.5V/div. 0.2µs/div.
Normal mode: play



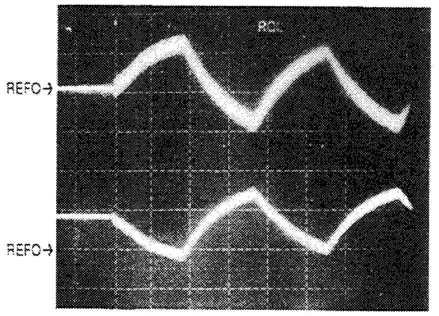
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



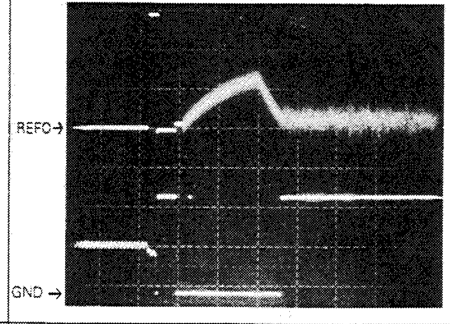
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800µm.



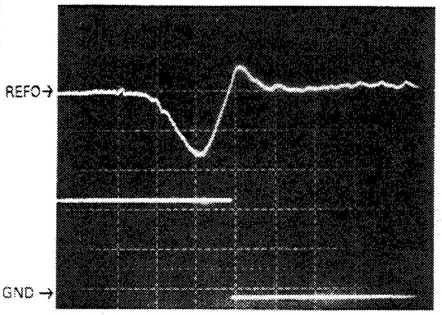
③ CH1: FIN 0.5V/div.
④ CH2: FO+ 2V/div. 0.2s/div.
Test mode: No disc, Focus close



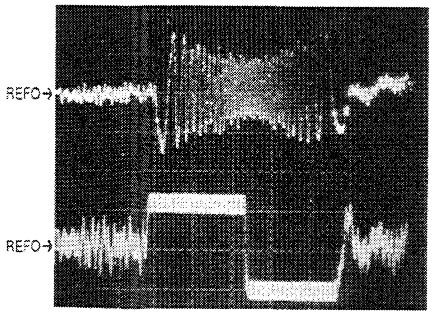
③ CH1: FIN 0.5V/div.
⑤ CH2: FOK 2V/div. 0.2s/div.
Normal mode: Focus close



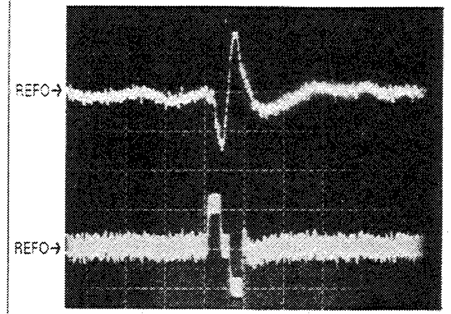
⑥ CH1: FEY 0.5V/div.
⑦ CH2: XSO 2V/div. 1ms/div.
Normal mode: Focus close



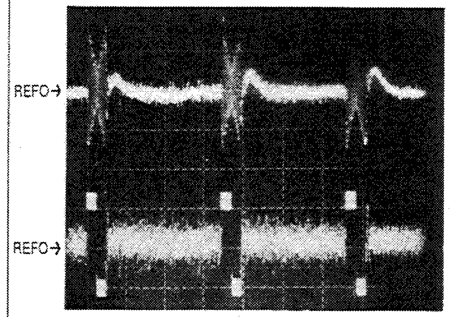
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: 32 track jump (FWD)



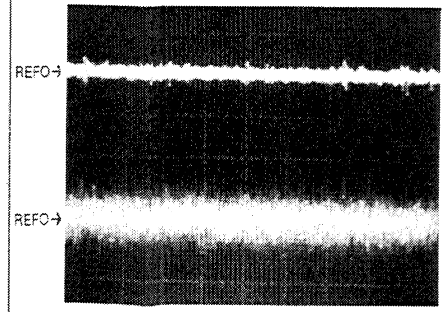
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: Single jump (FWD)



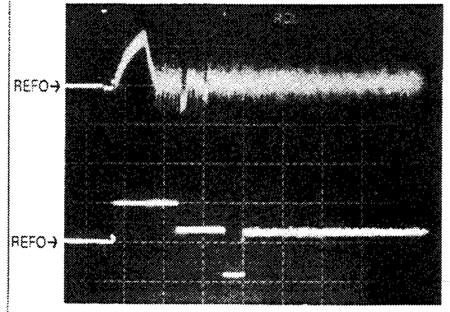
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 5ms/div.
Test mode: 100 track jump (FWD)



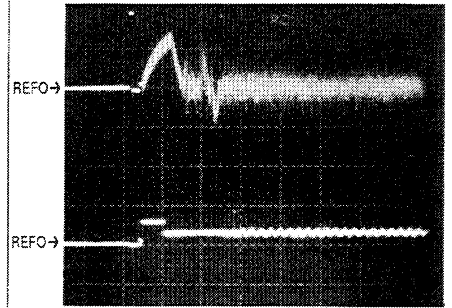
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div. 20ms/div.
Normal mode: Play



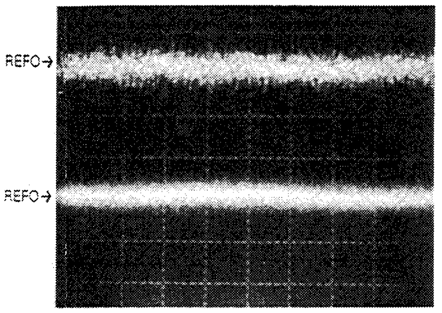
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (12cm)



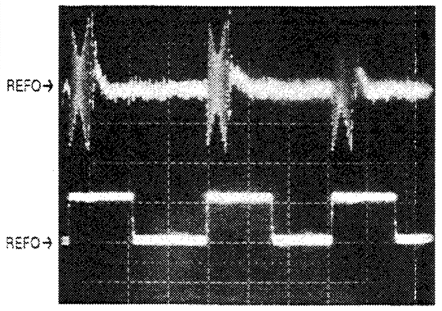
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (8cm)



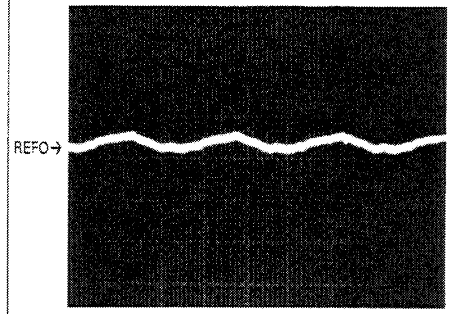
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 20ms/div.
Normal mode: Play



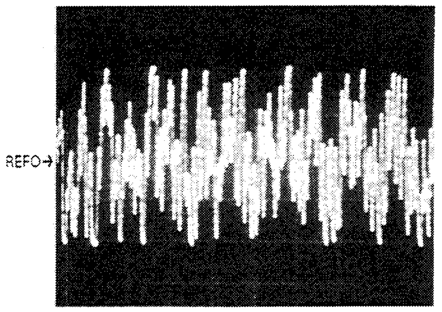
⑧ CH1: TEY 0.5V/div.
㉓ CH2: CIN 0.5V/div. 5ms/div.
Test mode: 100 track jump (FWO)



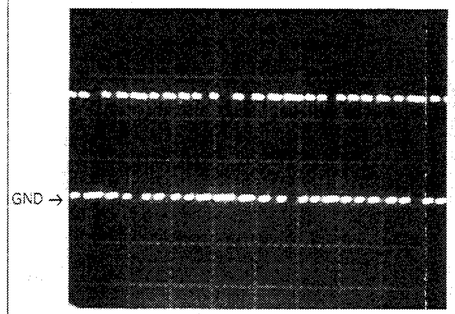
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: 1Play (12cm disc)



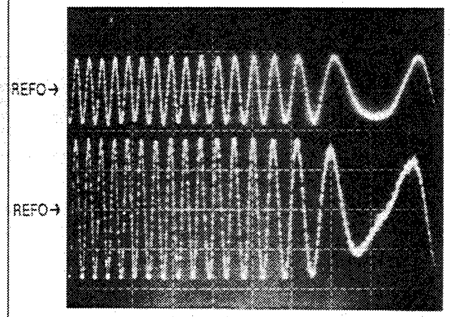
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



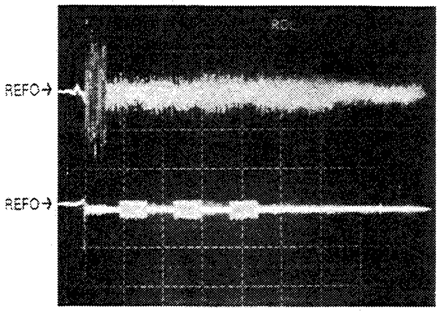
⑪ EFM 2V/div. 5µs/div.
Play



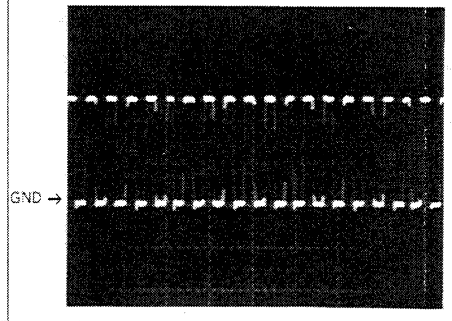
⑧ CH1: TEY 1V/div.
⑫ CH2: TEC 1V/div. 2ms/div.
Test mode: Focus closed
Tracking open



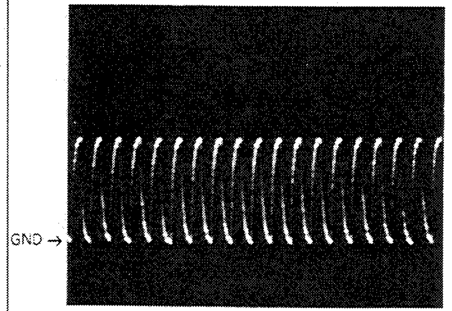
⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div. 0.1s/div.
Normal mode: AGC after focus close



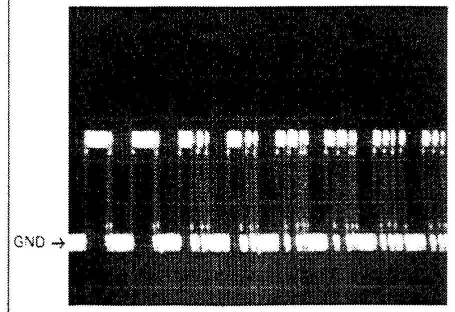
⑮ PLCK 2V/div. 0.5µs/div.
Play



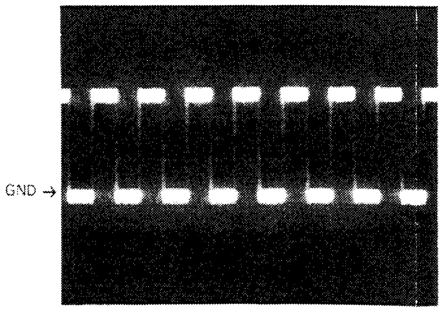
⑯ SCKO 2V/div. 1µs/div.
Play



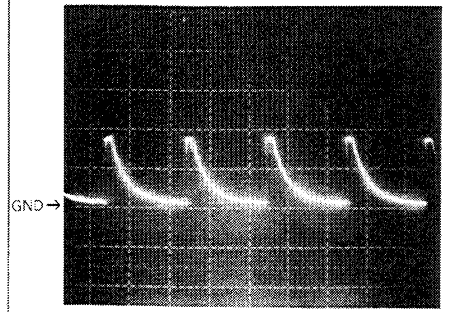
⑰ Dout 2V/div. 10µs/div.
Play



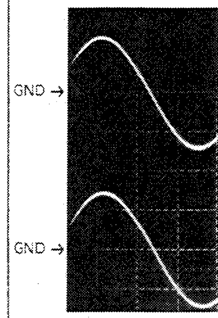
⑱ LRCK 2V/div. 20µs/div.
Play



⑲ VD 5V/div. 50ms/div.
Normal mode: No disc



㉒ CH1: R OUT 1
㉑ CH2: L OUT 1
Normal mode: Pl



ram.

s/div.

isses

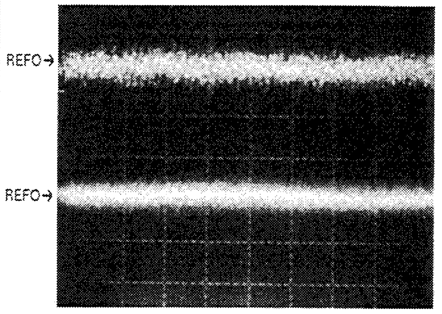
'div.

'div.

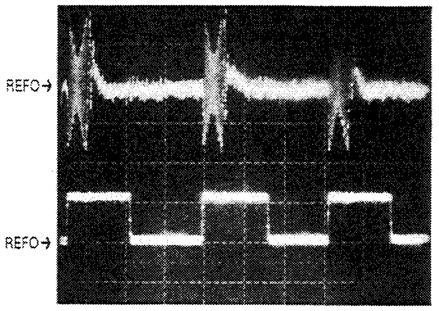
)

div.

⑧ CH1: TEY 0.5V/div. 20ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Play

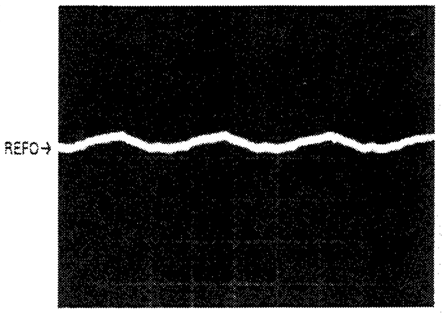


⑧ CH1: TEY 0.5V/div. 5ms/div.
㉓ CH2: CIN 0.5V/div.
Test mode: 100 track jump (FWO)



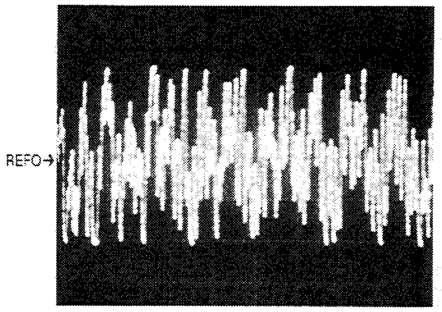
⑩ SIN 0.5V/div. 50ms/div.

Normal mode: 1Play (12cm disc)



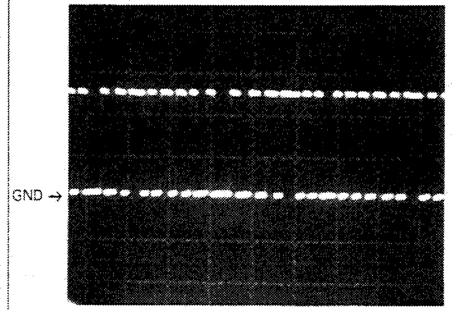
⑩ SIN 0.5V/div. 10ms/div.

Search (12cm disc)

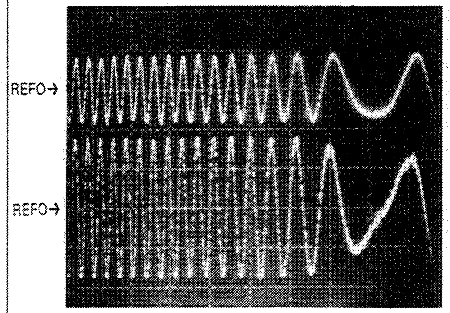


⑪ EFM 2V/div. 5µs/div.

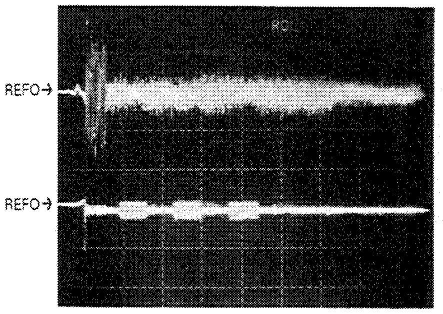
Play



⑧ CH1: TEY 1V/div. 2ms/div.
⑫ CH2: TEC 1V/div.
Test mode: Focus closed
Tracking open

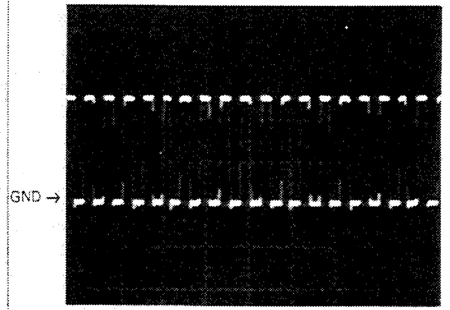


⑧ CH1: TEY 0.5V/div. 0.1s/div.
⑥ CH2: FEY 0.5V/div.
Normal mode: AGC after focus close



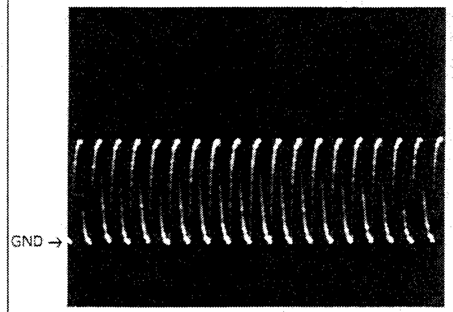
⑮ PLCK 2V/div. 0.5µs/div.

Play



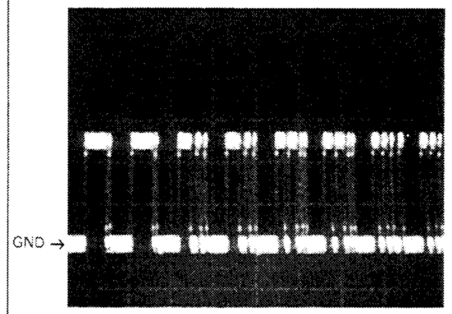
⑯ SCKO 2V/div. 1µs/div.

Play



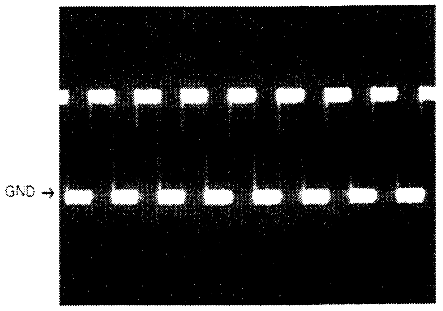
⑰ Dout 2V/div. 10µs/div.

Play



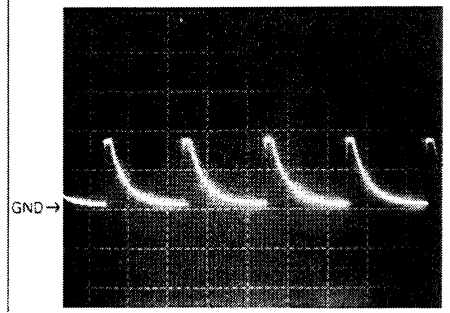
⑱ LRCK 2V/div. 20µs/div.

Play

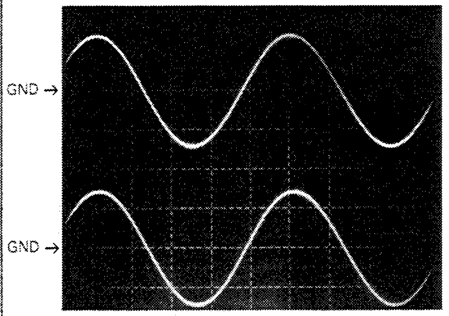


⑲ VD 5V/div. 50ms/div.

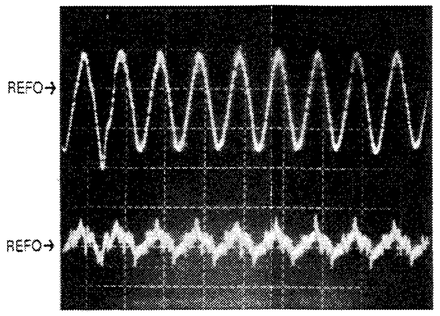
Normal mode: No disc



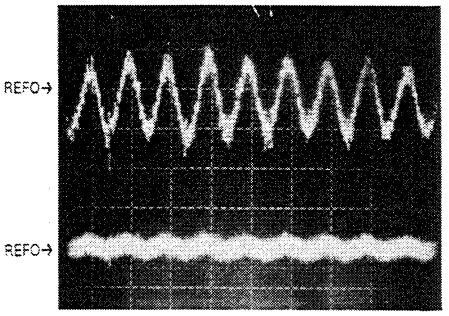
㉒ CH1: R OUT 1V/div. 0.2ms/div.
㉑ CH2: L OUT 1V/div.
Normal mode: Play (1kHz 0dB)



⑥ CH1: FEY 1V/div. 1ms/div.
③ CH2: FIN 1V/div.
Normal mode: During AGC



⑧ CH1: TEY 0.2V/div. 1ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: During AGC



4.5 FM/AM TUNER UNIT

● Circuit Diagram

NOTE

▭ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

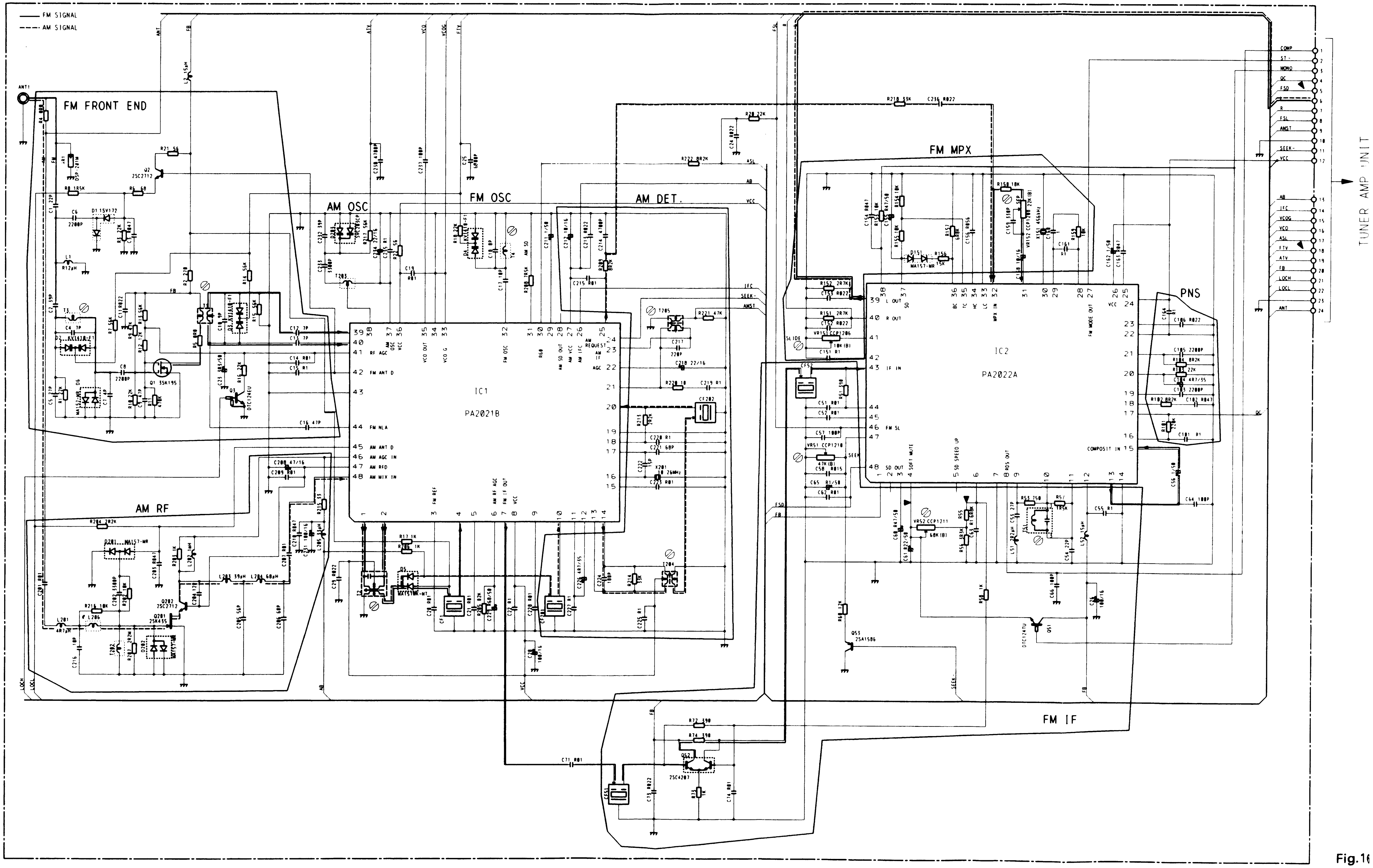

FM SIGNAL
AM SIGNAL
ANT1
FM FRONT END
AM OSC
FM OSC
AM DET.
FM MPX
PNS
AM RF
FM IF
IC1
PA2021B
IC2
PA2022A
TUNER AMP UNIT
COMP
ST-
MONO
QC
FSD
R
FSL
AMST
SEEK-
VCC
AB
IFC
VCOG
VCO
ASL
FTV
ATV
FB
LOCH
LOCL
ANT
Q1 3SK195
Q2 2SC2712
Q3 DTC124EU
Q201 2SK435
Q202 2SC2712
Q51 DTC124EU
Q52 2SC4207
Q53 2SA1586
X201 10.26MHz
CF201
CF202
CF51
CF52
CFS1
T201
T203
T204
T205
SLIDE
1
2
3
4
5
6

Fig.1

● Connection Diagram

IC, Q	Q201 Q3 Q202 Q1			Q2 IC1	Q52	Q53	Q51 IC2	
ADJ	T3	T1	T2		T4 T204 T205 VR51	VR52	VR151 VR152	T51

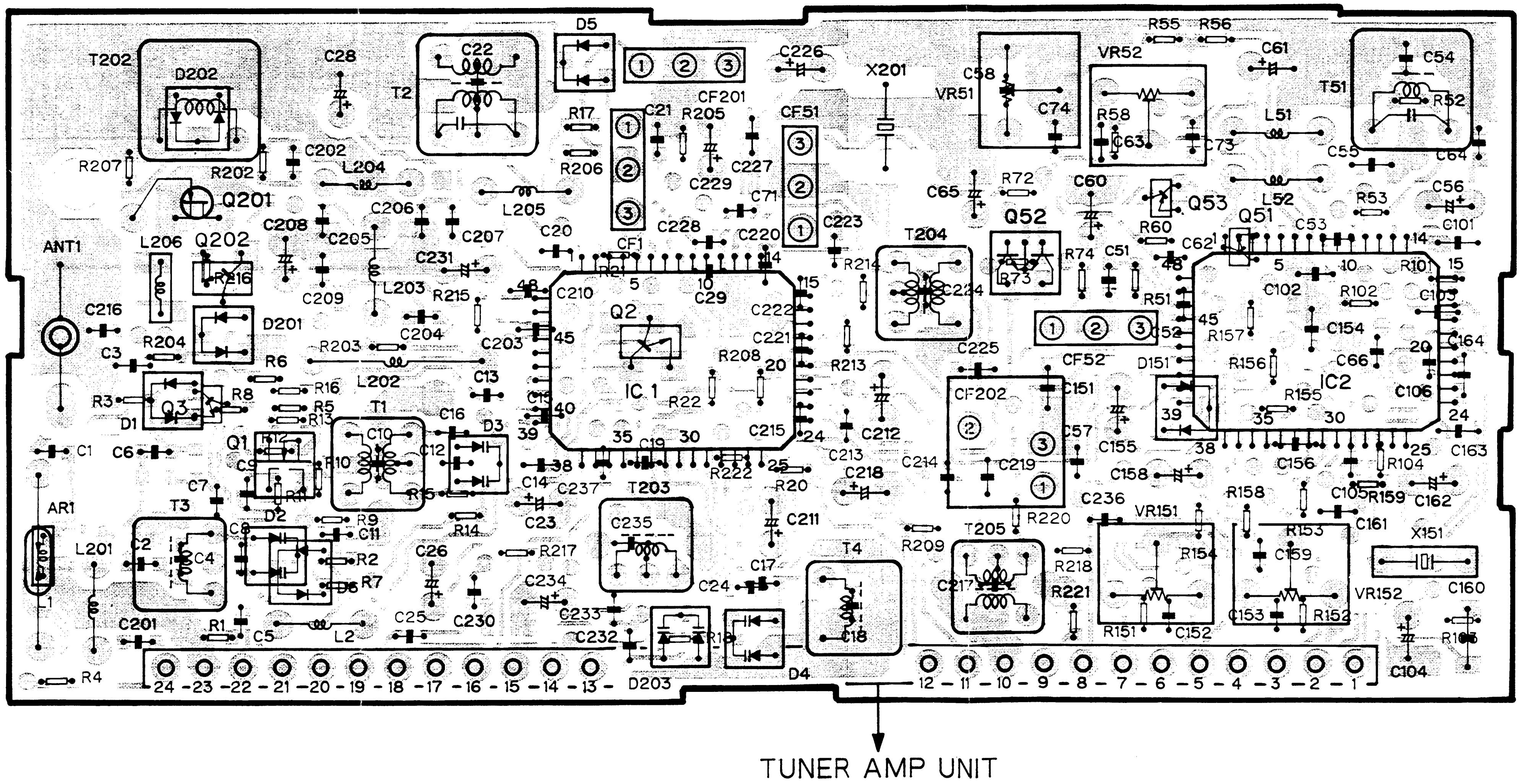

T202
D202
C28
T2
C22
D5
① ② ③
C226
X201
C58
VR51
VR52
R55
R56
C61
T51
C54
R52
R207
R202
C202
L204
Q201
R17
R206
C21
R205
CF201
CF51
C227
C229
C74
R58
C63
C73
L51
C55
C64
C56
ANT1
L206
Q202
C208
C205
C206
C207
L205
C20
CF1
C228
C71
C220
C223
C65
R72
Q52
C60
Q53
Q51
L52
R53
R60
C53
C101
R216
C231
L203
R215
C209
C210
Q2
C29
C222
C221
R214
T204
C224
R74
C51
C62
R51
C102
R102
C104
C216
C3
R204
D201
R203
C204
C203
R208
R213
C225
CF52
C52
R157
C154
R156
C66
C164
R3
D1
Q3
R8
R6
R16
L202
R5
R13
C13
IC 1
R22
CF202
C151
D151
IC2
R155
C106
Q1
R12
C9
R10
C10
T1
C16
D3
C12
C215
C212
C57
C155
C163
C1
C6
C7
R11
D2
R15
C14
C237
T203
R222
C213
C218
C214
C219
C158
C156
R104
AR1
T3
R9
C11
R14
C23
R20
C211
C236
VR151
R158
C105
R159
C162
L201
C2
C4
C8
R2
R7
D6
C26
R217
C235
T4
R209
T205
R220
R218
R154
R153
C161
X151
C159
C234
C17
C24
C217
R221
VR152
C160
C201
R1
C5
L2
C25
C230
C233
C232
R18
C18
R151
C152
C153
R152
R106
R4
24 - 23 - 22 - 21 - 20 - 19 - 18 - 17 - 16 - 15 - 14 - 13 -
D203
D4
12 - 11 - 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1
C104
TUNER AMP UNIT

Fig.17

.20

4.6 KEY BOARD UNIT(DEH-605RDS)

- **Circuit Diagram**

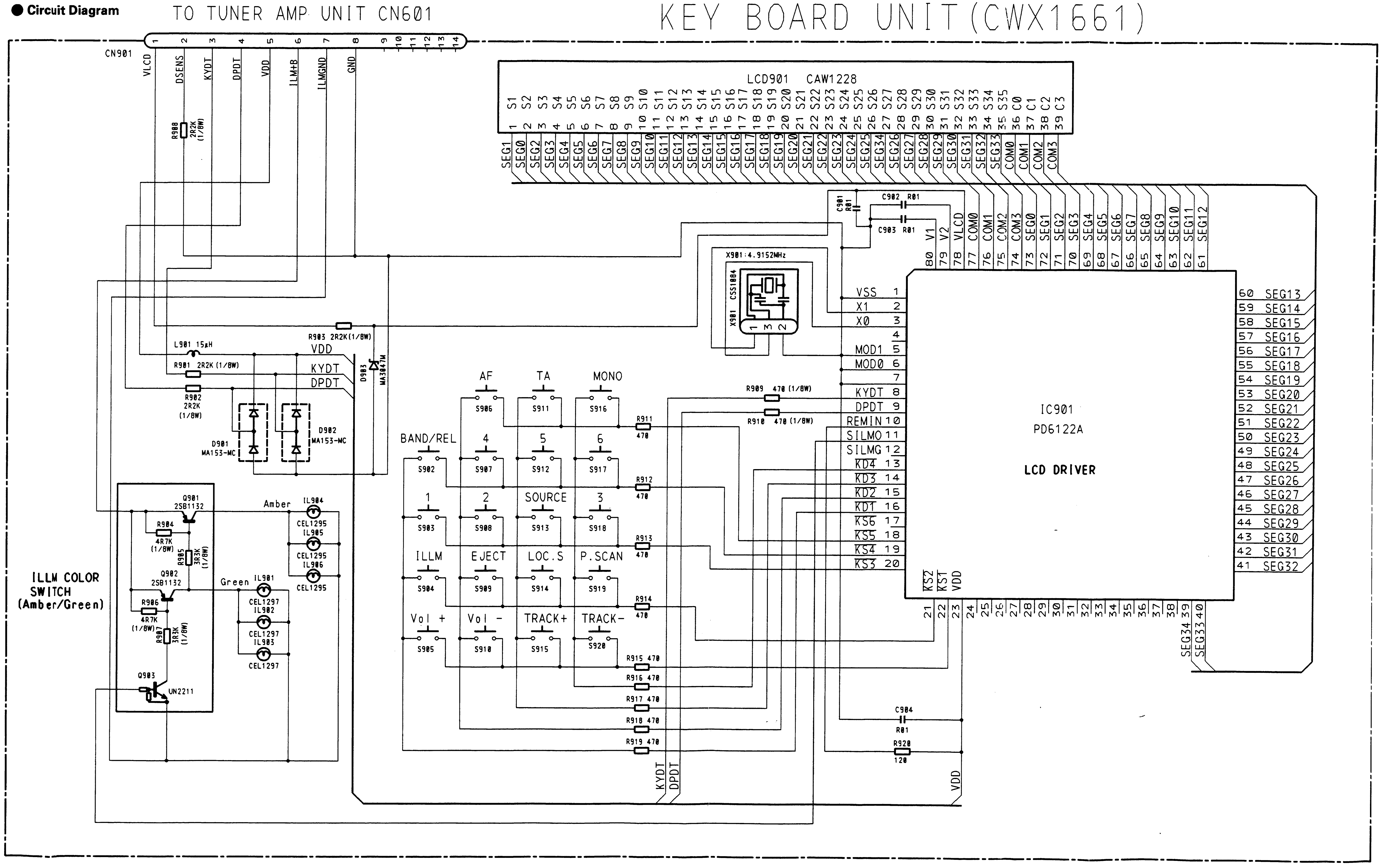

TO TUNER AMP UNIT CN601
KEY BOARD UNIT(CWX1661)
CN901
VLCD
DSENS
KYDT
DPDT
VDD
ILM+B
ILMGND
GND
LCD901 CAW1228
S1 … S35, C0, C1, C2, C3
SEG1 SEG0 SEG2 … SEG33 COM0 COM1 COM2 COM3
R908 2R2K (1/8W)
R903 2R2K(1/8W)
L901 15μH
R901 2R2K (1/8W)
R902 2R2K (1/8W)
VDD
KYDT
DPDT
D903 MA3047M
D901 MA153-MC
D902 MA153-MC
C901 R01
C902 R01
C903 R01
X901:4.9152MHz
X901 CSS1004
IC901
PD6122A
LCD DRIVER
VSS 1
X1 2
X0 3
4
MOD1 5
MOD0 6
7
KYDT 8
DPDT 9
REMIN 10
SILMO 11
SILMG 12
KD4 13
KD3 14
KD2 15
KD1 16
KS6 17
KS5 18
KS4 19
KS3 20
KS2 21
KS1 22
VDD 23
V1 80
V2 79
VLCD 78
COM0 77
COM1 76
COM2 75
COM3 74
SEG0 73
SEG1 72
SEG2 71
SEG3 70
SEG4 69
SEG5 68
SEG6 67
SEG7 66
SEG8 65
SEG9 64
SEG10 63
SEG11 62
SEG12 61
60 SEG13
59 SEG14
58 SEG15
57 SEG16
56 SEG17
55 SEG18
54 SEG19
53 SEG20
52 SEG21
51 SEG22
50 SEG23
49 SEG24
48 SEG25
47 SEG26
46 SEG27
45 SEG28
44 SEG29
43 SEG30
42 SEG31
41 SEG32
SEG34 39
SEG33 40
R909 470 (1/8W)
R910 470 (1/8W)
AF S906
TA S911
MONO S916
BAND/REL S902
4 S907
5 S912
6 S917
1 S903
2 S908
SOURCE S913
3 S918
ILLM S904
EJECT S909
LOC.S S914
P.SCAN S919
Vol + S905
Vol - S910
TRACK+ S915
TRACK- S920
R911 470
R912 470
R913 470
R914 470
R915 470
R916 470
R917 470
R918 470
R919 470
C904 R01
R920 120
KYDT
DPDT
VDD
ILLM COLOR SWITCH (Amber/Green)
Q901 2SB1132
R904 4R7K (1/8W)
R905 3R3K (1/8W)
Q902 2SB1132
R906 4R7K (1/8W)
R907 3R3K (1/8W)
Q903 UN2211
Amber
IL904 CEL1295
IL905 CEL1295
IL906 CEL1295
Green
IL901 CEL1297
IL902 CEL1297
IL903 CEL1297

Fig.18

● Connection Diagram

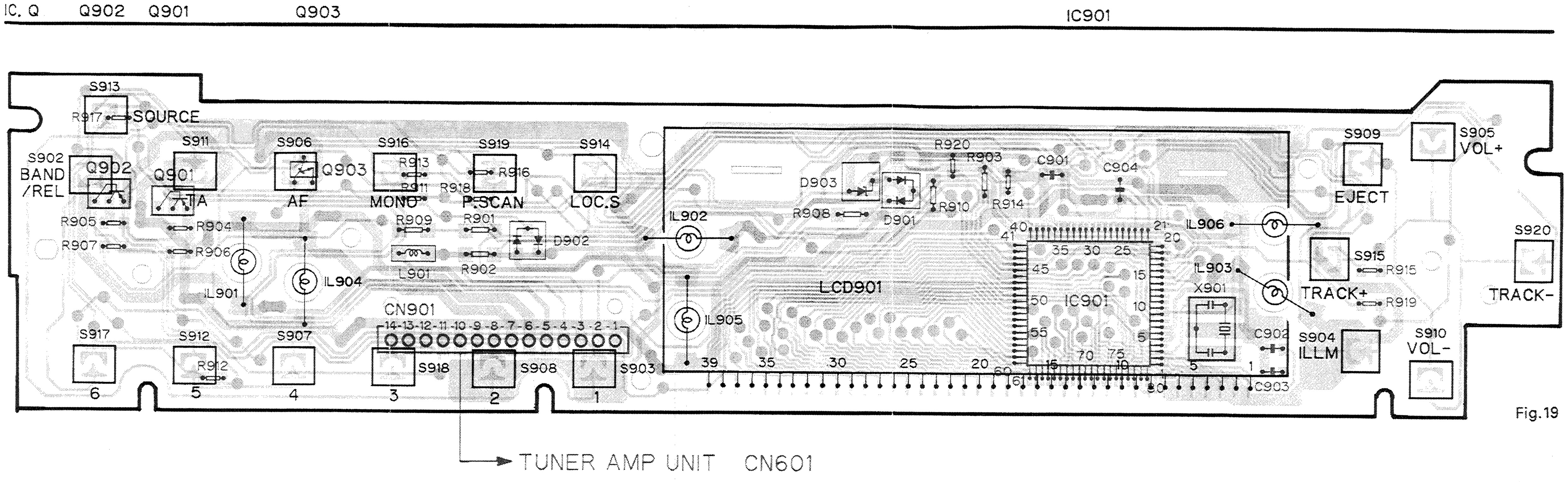

IC. Q
Q902
Q901
Q903
IC901
S913
R917
SOURCE
S902
BAND
/REL
Q902
Q901
S911
TA
S906
AF
Q903
S916
R913
R911
R918
MONO
S919
R916
P.SCAN
S914
LOC.S
R905
R907
R904
R906
R909
R901
R902
D902
L901
IL901
IL904
CN901
14 13 12 11 10 9 8 7 6 5 4 3 2 1
S917
S912
R912
S907
S918
S908
S903
6
5
4
3
2
1
R920
R903
C901
C904
D903
D901
R908
R910
R914
IL902
IL905
LCD901
IC901
IL906
IL903
X901
C902
C903
S909
EJECT
S905
VOL+
S915
R915
TRACK+
R919
S904
ILLM
S910
VOL-
S920
TRACK-
TUNER AMP UNIT CN601

Fig.19

4.7 KEY BOARD UNIT(DEH-505SDK,505,405SDK,405)

● Connection Diagram

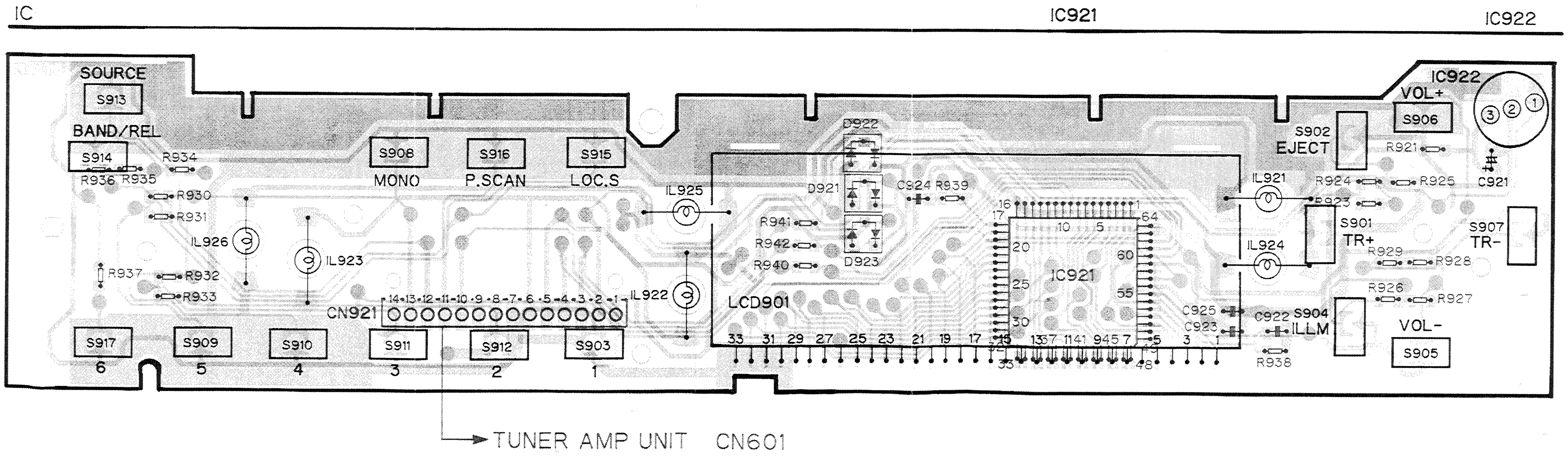

IC
IC921
IC922
SOURCE
S913
BAND/REL
S914
R934
R936
R935
R930
R931
R937
R932
R933
IL926
IL923
S908
MONO
S916
P.SCAN
S915
LOC.S
CN921
14 13 12 11 10 9 8 7 6 5 4 3 2 1
IL922
IL925
S917
S909
S910
S911
S912
S903
6
5
4
3
2
1
D922
D921
D923
C924
R939
R941
R942
R940
LCD901
IC921
IC922
VOL+
S906
S902
EJECT
R921
IL921
R924
R925
R923
C921
S901
TR+
S907
TR-
IL924
R929
R928
R926
R927
C925
C923
C922
S904
ILLM
R938
VOL-
S905
TUNER AMP UNIT CN601

Fig.20

● Circuit Diagram

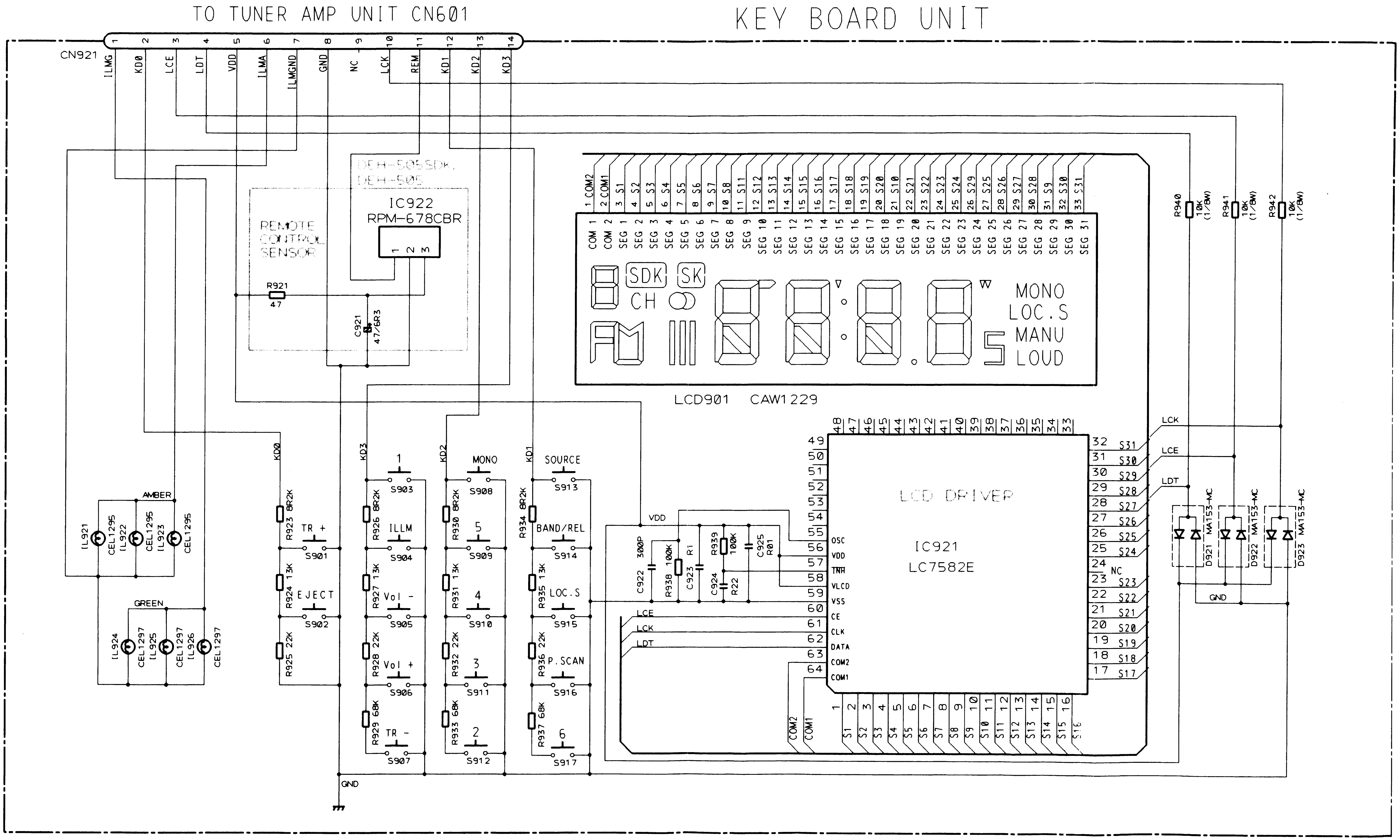

TO TUNER AMP UNIT CN601
KEY BOARD UNIT
CN921
1 ILMG
2 KD0
3 LCE
4 LDT
5 VDD
6 ILMA
7 ILMGND
8 GND
9 NC
10 LCK
11 REM
12 KD1
13 KD2
14 KD3
DEH-505SDK, DEH-505
REMOTE CONTROL SENSOR
IC922
RPM-678CBR
R921 47
C921 47/6R3
LCD901 CAW1229
COM 1
COM 2
SEG 1 … SEG 31
SDK
SK
CH
MONO
LOC.S
MANU
LOUD
LCD DRIVER
IC921
LC7582E
OSC
VDD
TNH
VLCD
VSS
CE
CLK
DATA
COM2
COM1
S1 … S31
NC
C922 300P
R938 100K
R1
C923
R939 100K
C924
R22
C925
R01
R940 10K (1/8W)
R941 10K (1/8W)
R942 10K (1/8W)
D921 MA153-MC
D922 MA153-MC
D923 MA153-MC
LCK
LCE
LDT
GND
KD0
KD1
KD2
KD3
R923 8R2K
R924 13K
R925 22K
TR +
S901
EJECT
S902
1
S903
R926 8R2K
ILLM
S904
R927 13K
Vol -
S905
R928 22K
Vol +
S906
R929 68K
TR -
S907
MONO
S908
R930 8R2K
5
S909
R931 13K
4
S910
R932 22K
3
S911
R933 68K
2
S912
SOURCE
S913
R934 8R2K
BAND/REL
S914
R935 13K
LOC.S
S915
R936 22K
P.SCAN
S916
R937 68K
6
S917
AMBER
IL921 CEL1295
IL922 CEL1295
IL923 CEL1295
GREEN
IL924 CEL1297
IL925 CEL1297
IL926 CEL1297
GND

Fig.21

PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
CRT1574

CD MECHANISM MODULE
CX-540

- **This service manual describes operation of the CD mechanism incroporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module	CD Mechanism Unit
DEH-605RDS/EW,X1B/EW	CRT1563	CXK2810	CXA6475
DEH-505SDK/GR			
DEH-505/EW,X1B/EW			
DEH-405SDK/GR			
DEH-505/UC	CRT1570	CXK2800	CXA5970
DEH-503/ES			
DEH-45/UC			
DEH-405/UC			
DEH-305/US			
DEH-303/ES			
DEH-205/UC			
DEH-203/ES			

CONTENTS

1. CIRCUIT DESCRIPTION...2
2. MECHANISM DESCRIPTION..................................16
3. DISASSEMBLY...19

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY.LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL:[03]580-9911

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K-FFK.FEB. 1994 Printed in Japan

1. CIRCUIT DESCRIPTION

1.1 PRE-AMPLIFIER STAGE (IC1001 UPC2571GS)

The optical signals are converted to voltage signals using an i/v amplifier inside the PU unit.

These voltage signals (A - F) are further processed by this pre-amp stage.

The pre-amplifier performs the following tasks

> Automatic power control of the PU unit's laser diode.

> Generation of an equalized RF signal from the photo-detector outputs (A - D).

> Generation of a focus error signal from the photo-detector outputs (A - D).

> Generation of a tracking error signal from the photo-detector outputs (E & F).

> Generation of a tracking zero crossing signal from the photo-detector outputs (E & F).

This IC runs from a single voltage supply (+5V). The reference voltage for this IC, the PU unit, and all the servo circuitry is REFO. This is obtained from pin 19 of the pre-amp ; which in turn is derived from the output REFOUT of the servo LSI, IC1201, UPD63700GF. The voltages REFOUT and REFO should be at +2.5V DC with respect to GND. All measurements and observations should be made using REFO as the reference as this is a buffered output. Care should be taken not to inadvertently short REFO to GND.

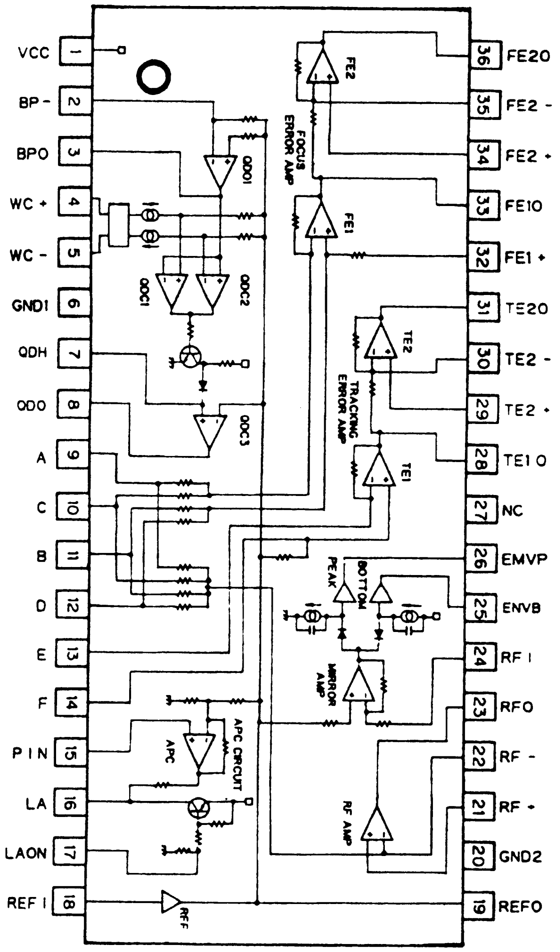

VCC 1
BP - 2
BPO 3
WC + 4
WC - 5
GND1 6
QDH 7
QDO 8
A 9
C 10
B 11
D 12
E 13
F 14
PIN 15
LA 16
LAON 17
REF I 18
REFO 19
GND2 20
RF + 21
RF - 22
RFO 23
RF I 24
ENVB 25
EMVP 26
NC 27
TE1 O 28
TE2 + 29
TE2 - 30
TE2O 31
FE1 + 32
FE1O 33
FE2 + 34
FE2 - 35
FE2O 36
FE2
FOCUS ERROR AMP
FE1
QDO1
QDC1
QDC2
QDC3
TE2
TRACKING ERROR AMP
TE1
BOTTOM
PEAK
MIRROR AMP
APC
APC CIRCUIT
RF AMP
REF

Fig.1 : UPC2571GS BLOCK DIAGRAM

1) Automatic Power Control (APC)

The laser diode's junction voltage varies greatly with temperature ; causing large output variations in optical power. To avoid this, a monitor diode is used in a feedback circuit to keep the optical power constant. As two different manufacturer's laser diodes are used the LD current falls into two broad bands : approx. 40mA and approx. 60mA.

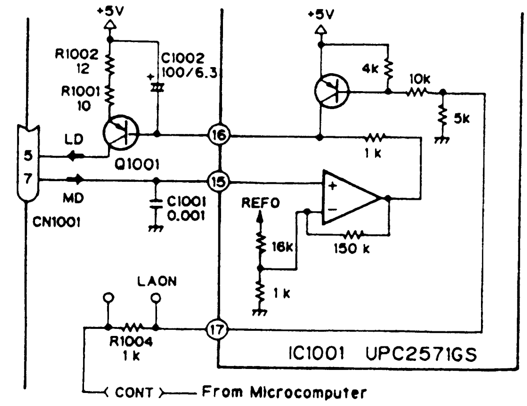

+5V
R1002
12
C1002
100/6.3
R1001
10
LD
Q1001
5
7
MD
CN1001
C1001
0.001
16
15
17
+5V
4k
10k
5k
1 k
REFO
16k
150 k
1 k
LAON
R1004
1 k
IC1001 UPC2571GS
CONT
From Microcomputer

Fig.2 : APC CIRCUIT

2) RF Amplifier

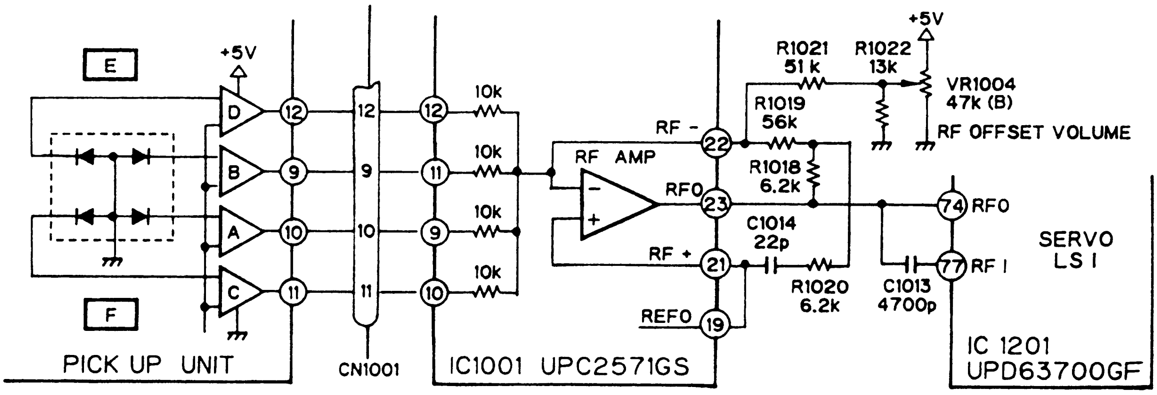
This performs a simple summation of the photodetector outputs A,B,C & D, amplifies, and equalizes to produce the RF signal at RFO. The RF eye pattern may be monitored here. The RFO OFFSET volume is used to ensure that the RFO waveform has the correct offset relative to the FOK threshold level inside the servo LSI UPD63700GF. The FOK signal is used in the focus close sequence, and during play to control the defect circuit inside the UPD63700GF.

The AC coupled RFO signal, RFI, is used by the UPD63700GF to generate the EFM signal which is used in turn by the DSP spindle CLV control sections.

For low frequency signals :

VRFO = (A+B+C+D) x (R1018+R1019)/10k = (A+B+C+D) x 6.22

The RFO waveform should have an amplitude of approx. 1.9Vpp, with it's upper envelope at +1.1V DC w.r.t. REFO.



E
F
+5V
D
B
A
C
12
9
10
11
PICK UP UNIT
CN1001
10k
10k
10k
10k
IC1001 UPC2571GS
RF AMP
RF -
RFO
RF +
REFO
22
23
21
19
R1021 51 k
R1022 13k
R1019 56k
R1018 6.2k
C1014 22p
R1020 6.2k
C1013 4700p
+5V
VR1004 47k (B)
RF OFFSET VOLUME
74 RFO
77 RF I
SERVO LS I
IC 1201 UPD63700GF

Fig.3 : RFO AMPLIFIER

3) Focus Error Amplifier

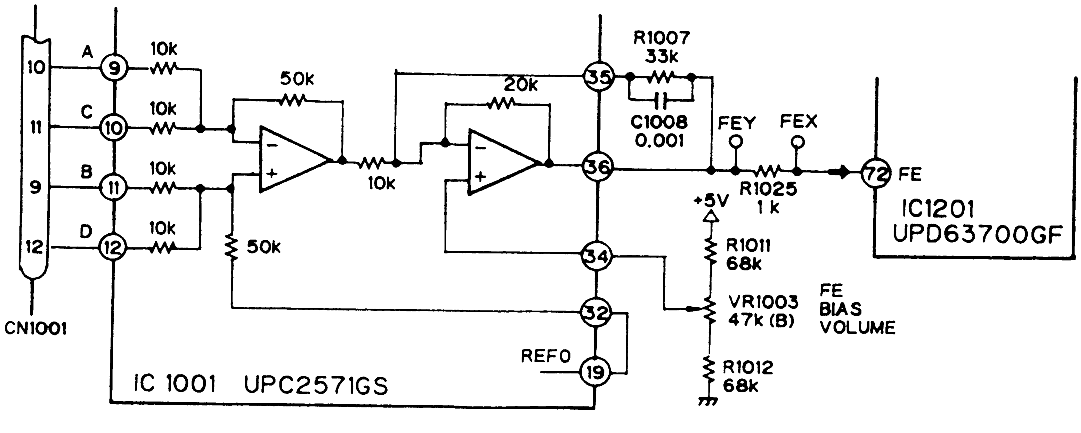
This produces a focus error signal used as the basis for the focus servo.

VFEY = ((A+C)-(B+D)) x 5 x (R1007//20k)/10k

= FE x 6.23 (FE = PU unit focus error)

The S-Curve at FEY should have an amplitude of approx. 1.9Vpp.

The second amplifier stage is also a low pass filter, fc=11kHz, and has a bias volume adjustment. This adjustment is used to vary the reference bias level of the focus servo loop and is adjusted to obtain an optimum eye pattern at RFO.



10
11
9
12
CN1001
A
C
B
D
9
10
11
12
10k
10k
10k
10k
50k
50k
10k
20k
35
36
34
32
19
REFO
IC 1001 UPC2571GS
R1007 33k
C1008 0.001
FEY
FEX
R1025 1 k
+5V
R1011 68k
VR1003 47k (B)
FE BIAS VOLUME
R1012 68k
72 FE
IC1201 UPD63700GF

Fig.4 : FOCUS ERROR AMPLIFIER

4) Tracking Error Amplifier

This produces the tracking error signal used in the tracking servo loop.

$VTEY = (25 \times E) - (25 \times F \times 2 \times 10k / (T.BAL + 10k))$

Normally, the sensitivity of E & F are the same and T.BAL=10k

$\Rightarrow VTEY = 25 \times (E - F)$

If, however, the E and F sensitivities are different the T.BAL volume can be used to cancel out the unbalance. The offset adjustment TE OFFSET is to cancel any DC offsets from the photo-detectors or op-amps to ensure the reference bias for the servo loop is at zero. Maladjustment of either of these pre-sets will result in poor tracking performance and susceptibility to skipping.

For a typical unit, the TEY level should be approx. 1.8 Vpp.

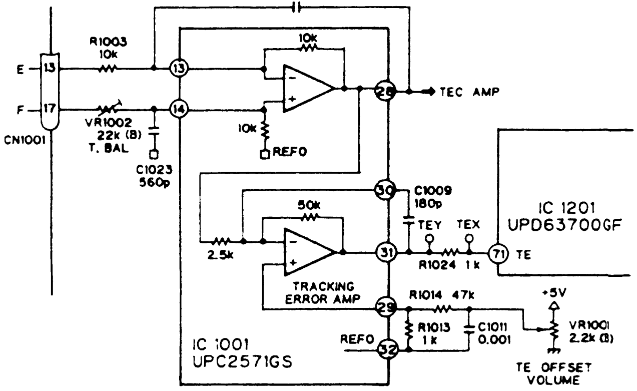

C1006 560p
R1003
10k
E
13
F
17
CN1001
VR1002
22k (B)
T. BAL
C1023
560p
13
14
10k
10k
REFO
28
TEC AMP
30
C1009
180p
50k
2.5k
TRACKING
ERROR AMP
31
TEY
TEX
R1024 1k
71
TE
IC 1201
UPD63700GF
29
R1014 47k
+5V
R1013
1k
C1011
0.001
VR1001
2.2k (B)
REFO
32
TE OFFSET
VOLUME
IC 1001
UPC2571GS

Fig.5 : TRACKING ERROR AMPLIFIER

5) Tracking Zero Crossing Amplifier

TEC1 is basically an amplified, AC coupled, version of the TEY waveform. It is used by the servo LSI IC1201, UPD63700GF to located the zero crossing points of the TEY signal to :

1) Determine how many tracks have been crossed during track jumping or a carriage move operation.
2) Determine in which direction the lens is moving when attempting to close tracking. This is used in the "tracking brake" circuit described later.

For signals in the range 500Hz - 5kHz :

$VTEC1 = R1005/R1006 \times (E - F) = 45.5 \times (E - F)$

Typically TEC1 is around 4.2Vpp, this means that the TEC1 signal level may be greater than the saturation limit of the op-amp and the signal will clip. However, since the servo LSI only uses the zero-crossing points, this is not critical.

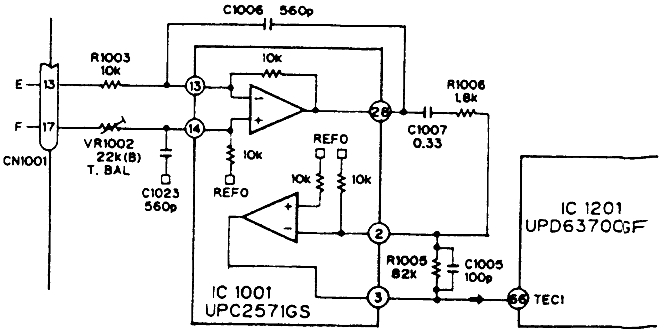

C1006 560p
R1003
10k
E
13
F
17
CN1001
VR1002
22k(B)
T. BAL
C1023
560p
13
14
10k
10k
REFO
REFO
10k
10k
28
R1006
1.8k
C1007
0.33
2
3
R1005
82k
C1005
100p
66
TEC1
IC 1201
UPD63700GF
IC 1001
UPC2571GS

Fig.6 : TRACKING ZERO CROSSING AMPLIFIER

1.2 SERVO STAGE (UPD63700GF)

All the servo equalization & sequencing, such as focus closing, track jumping, carriage moving etc. are performed in this LSI, as well as all the DSP functions : data decoding, error protection, interpolation etc. The signals FE & TE are digitized and processed by the servo block to produce the focus, tracking & carriage drive signals, in a PWM format.

The RFI signal is converted to the EFM signal which is decoded by the DSP block to produce an audio signal ; during this process, a spindle servo error signal is also generated and used by the servo block to produce a spindle drive signal, again in PWM form.

The PWM waveforms are filtered, to remove the PWM carrier, amplified by the driver IC1301 PA3026, and output to the corresponding actuators.

1) Focus Servo System

The main focus equalization takes place inside the UPD63700GF (figure 7). The equalizer response can be measured between FEX and FIN and has the shape shown in figure 8.

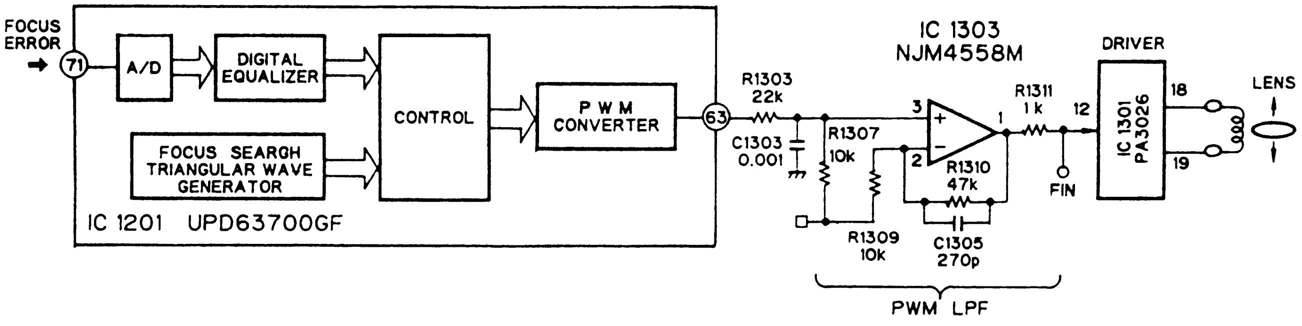

FOCUS ERROR
71
A/D
DIGITAL EQUALIZER
FOCUS SEARGH TRIANGULAR WAVE GENERATOR
CONTROL
P W M CONVERTER
63
IC 1201 UPD63700GF
R1303 22k
C1303 0.001
R1307 10k
R1309 10k
IC 1303 NJM4558M
3
2
1
R1310 47k
C1305 270p
R1311 1 k
FIN
12
DRIVER
IC 1301 PA3026
18
19
LENS
PWM LPF

Fig.7 : FOCUS SERVO BLOCK DIAGRAM

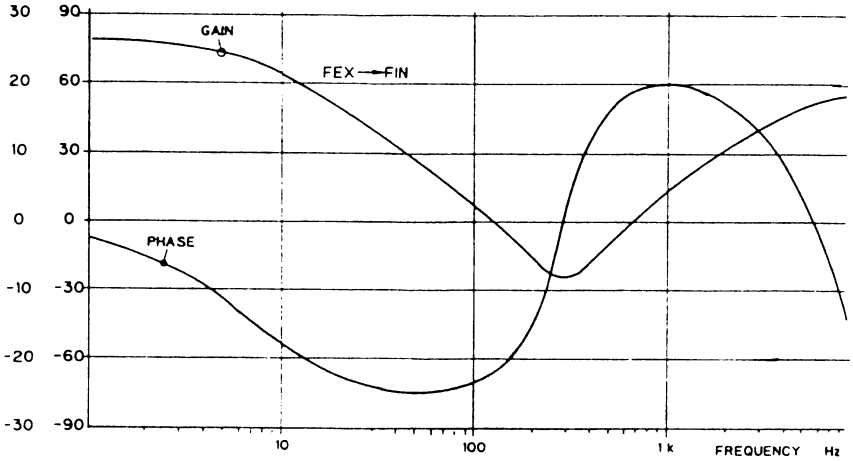


Fig.8 : FOCUS EQUALIZER

In order to smoothly close focus the lens must first be within approx. 5µm of the "just focused" position. This position is achieved by a focus search sequence. The lens is moved up and down using a triangular wave search voltage while the spindle motor is kicked and kept rotating at an appropriate speed. The servo LSI monitors the FE and RFO signals and, at an appropriate point, automatically closes focus.

The conditions for focus close are :

1) The lens is moving from a far to a near position relative to the disc,
2) FOK = HIGH (5V),
3) FZD (IC internal signal) was latched high and
4) FE = 0 (w.r.t. REFO).

When the focus servo closes, the servo LSI's serial data output port, XSO, will show a high-low transition. This is received by the microcomputer as an indication that the servo loop was closed and after about 25mS it begins monitoring the FOK output, via a LPF, to verify that focus is still closed ; in the event of FOK becoming low for an appreciable time, the microcomputer will take appropriate action.

The various signal levels which contribute to focus close are shown in figure 9, which shows the case where focus close has been inhibited.

In TEST MODE, using FOCUS CLOSE MODE 1, conditions 2 & 3 can be inhibited to allow the S-Curve, focus search voltage and the actual lens movement to be observed at ease.

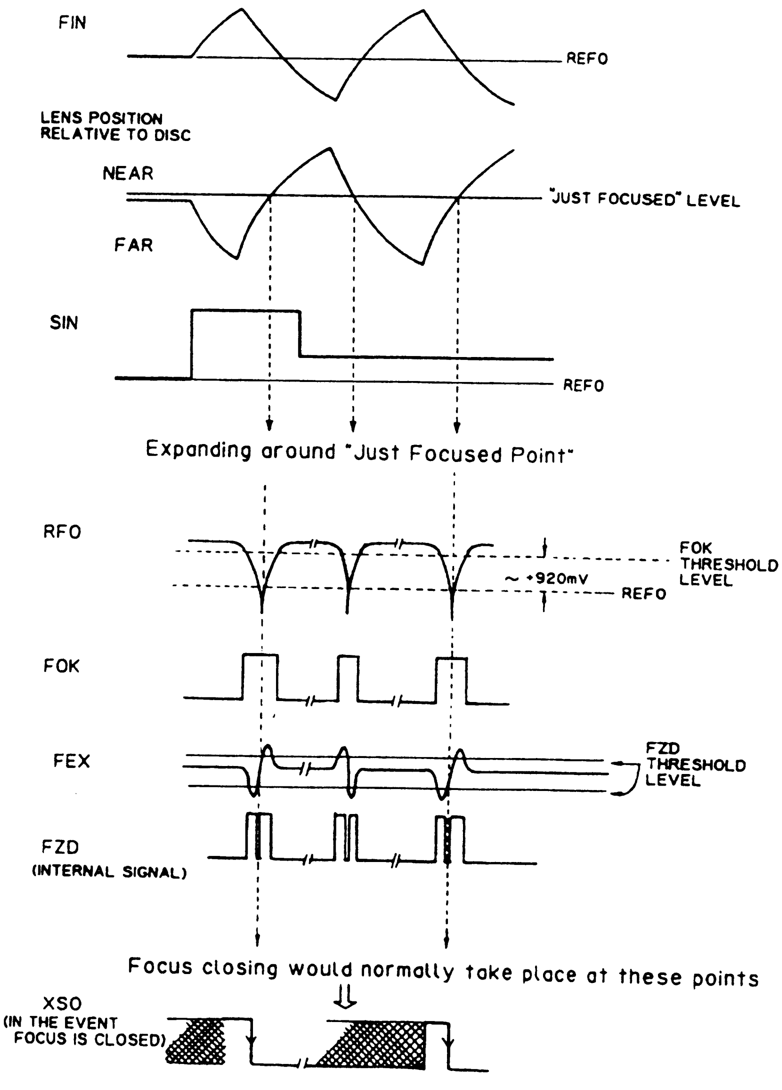

FIN
REFO
LENS POSITION RELATIVE TO DISC
NEAR
"JUST FOCUSED" LEVEL
FAR
SIN
REFO
Expanding around "Just Focused Point"
RFO
FOK THRESHOLD LEVEL
~ +920mV
REFO
FOK
FEX
FZD THRESHOLD LEVEL
FZD (INTERNAL SIGNAL)
Focus closing would normally take place at these points
XSO (IN THE EVENT FOCUS IS CLOSED)

Fig.9 : FOCUS CLOSING SEQUENCE

a) FOK CIRCUIT

The FOK circuit inside the servo LSI compares the lower envelope of the RFO signal with a threshold level fixed by the microcomputer. Should the envelope level fall below this FOK level then FOK becomes high. This is used during focus close as stated and also during play to control a defect circuit, which switches the focus & tracking servos into a hold mode should the RFO envelope become disrupted by dirt, grease etc, thus increasing the player's defect response (figure 10).
The FOK threshold is approx. +920mV w.r.t. REFO. It is for this reason that the upper envelope should be adjusted to +1.1V DC w.r.t. REFO.

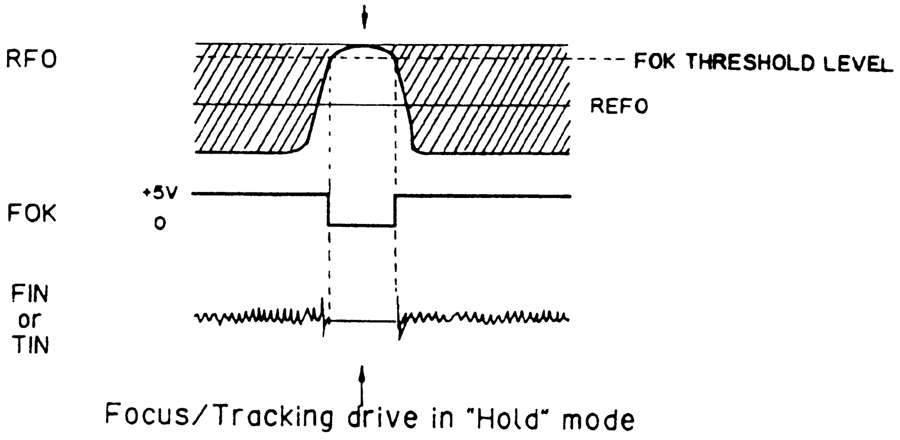

RFO
FOK THRESHOLD LEVEL
REFO
FOK
+5V
0
FIN
or
TIN
Focus/Tracking drive in "Hold" mode

Fig.10 : DEFECT CIRCUIT

b) FZD CIRCUIT

The FZD circuit inside the servo IC compares the absolute value of the FE signal to a threshold value and outputs a high/low signal which is then used in the focus close sequence as stated.

At power on, the microcomputer switches the laser diode off and reads the value of the FE bias via the servo LSI's A/D port. The FZD threshold is set 200mV above this bias level.

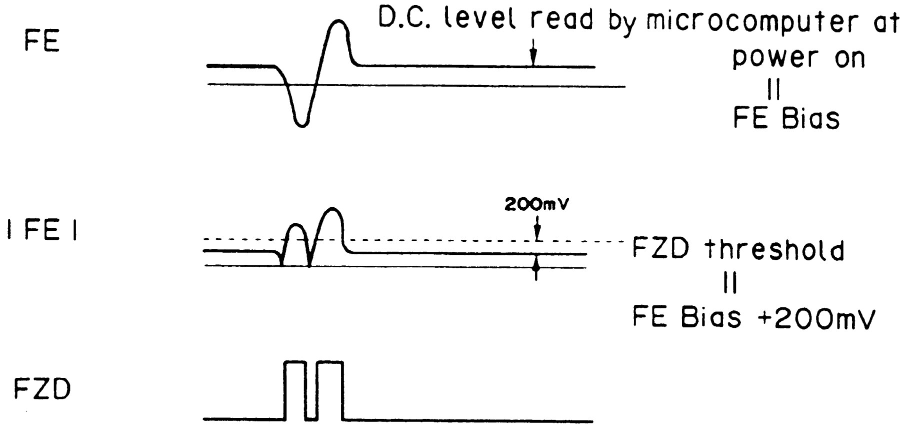

FE
D.C. level read by microcomputer at power on
=
FE Bias
| FE |
200mV
FZD threshold
=
FE Bias +200mV
FZD

Fig.11 : FZD CIRCUIT

2) Tracking Servo System

The main tracking equalization takes place inside the UPD63700GF (figure 12). The equalizer response can be measured between TEX and TIN and will have the shape shown in figure 13.

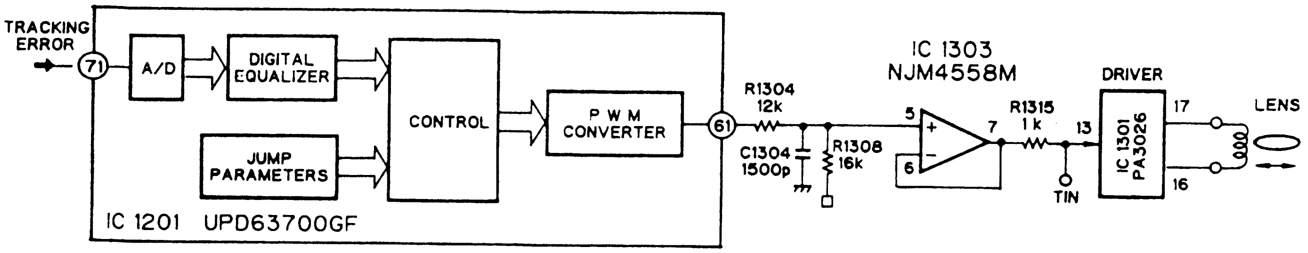

TRACKING ERROR
71
A/D
DIGITAL EQUALIZER
JUMP PARAMETERS
CONTROL
P W M CONVERTER
61
IC 1201 UPD63700GF
R1304 12k
C1304 1500p
R1308 16k
IC 1303 NJM4558M
5
6
7
R1315 1k
13
TIN
DRIVER
IC 1301 PA3026
17
16
LENS

Fig.12 : TRACKING SERVO BLOCK DIAGRAM

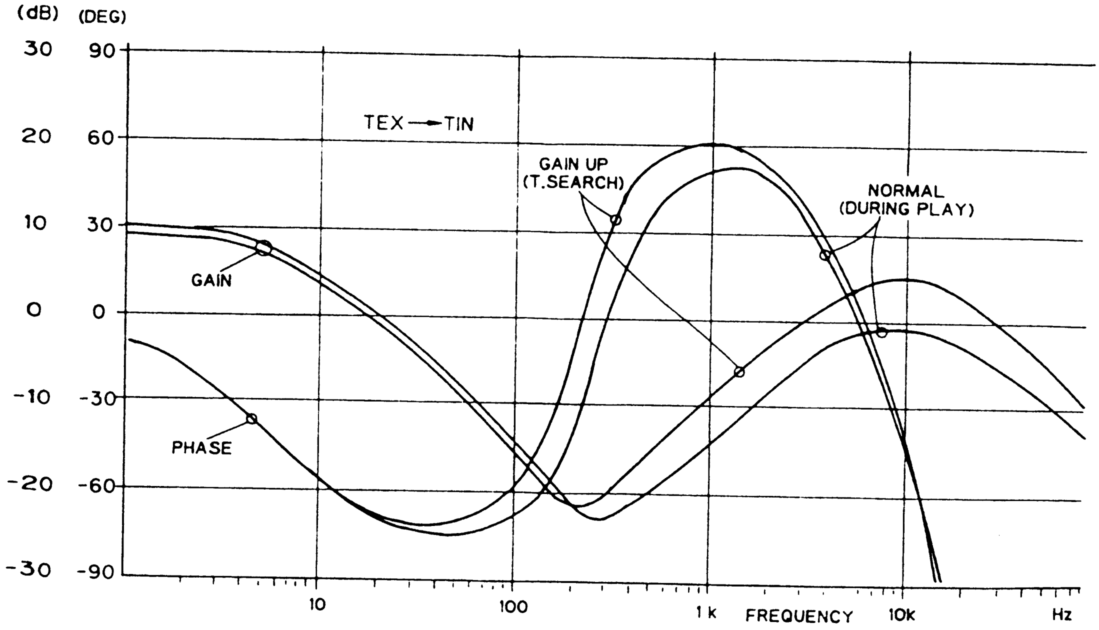


Fig.13 : TRACKING EQUALIZER

a) Track Jumping

Track jumping is performed automatically by the servo LSI upon receipt of the appropriate command from the microcomputer. The present microcomputer is programmed to use 1,4,10 & 32 track jump commands to achieve searching. The 32 track jump command may be used in pairs (64 tracks) or triplets (100 track) as required. In TEST MODE the 1,4,10,32 & 100 track jump and carriage move sequences may be observed by selecting the appropriate mode.

Note that the number of tracks jumped is controlled by setting an internal counter to half the total value and then counting this down using the zero crossing edges of TEC1. Once the counter is at zero, a brake pulse of fixed duration is output to bring the lens to a halt; allowing tracking to be closed and normal play to continue.

For a fixed period of time after a multi-track jump has been performed, a "tracking brake" circuit is activated in conjunction with a "gain-up" equalizer to ensure that the servo achieves stabilization before entering normal play.

Manual track search, in normal mode, uses a group of single track jumps to achieve FWD/REV at approx. ten times normal play speed.

The figures 14 & 15 show the timing charts for the single and multiple jump commands.

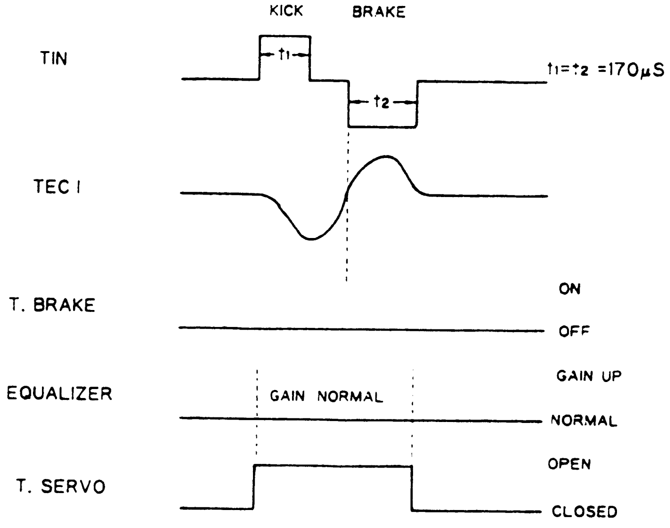

KICK
BRAKE
TIN
t1
t2
t1=t2 =170μS
TEC I
T. BRAKE
ON
OFF
EQUALIZER
GAIN NORMAL
GAIN UP
NORMAL
T. SERVO
OPEN
CLOSED

Fig.14 : SINGLE TRACK JUMP

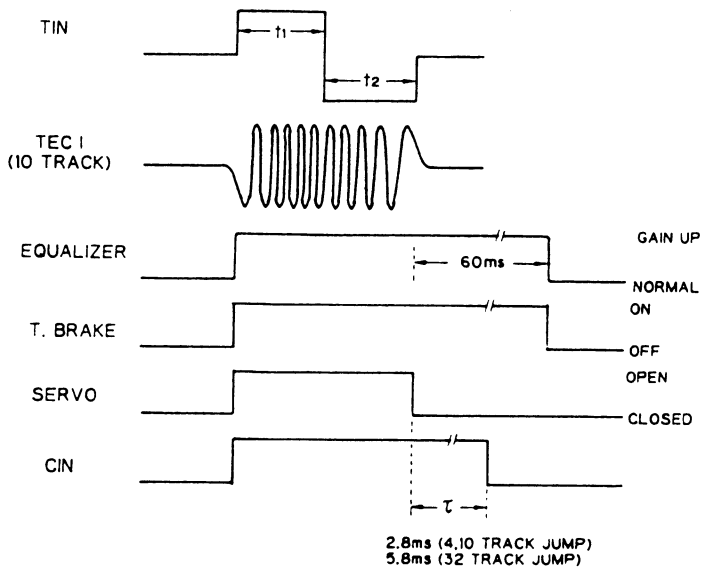
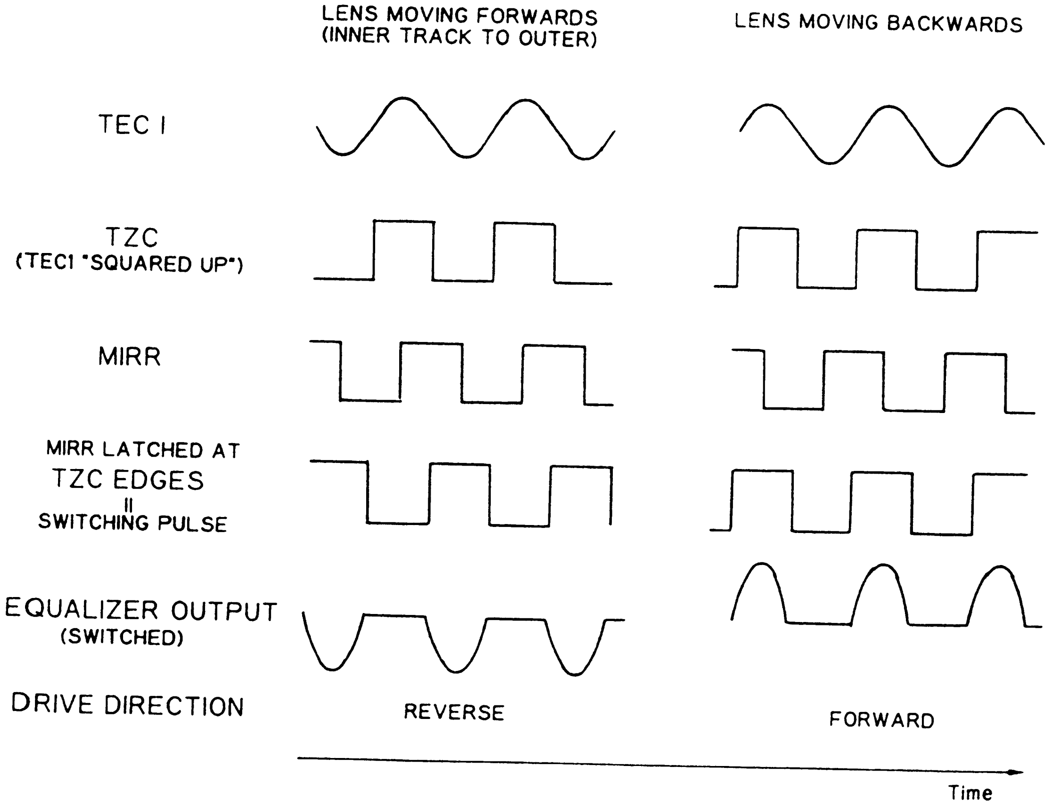

TIN
t1
t2
TEC I
(10 TRACK)
EQUALIZER
60ms
GAIN UP
NORMAL
T. BRAKE
ON
OFF
SERVO
OPEN
CLOSED
CIN
τ
2.8ms (4,10 TRACK JUMP)
5.8ms (32 TRACK JUMP)

Fig.15 : MULTI TRACK JUMP

b) Tracking Brake Circuit (Figure 16)

This relies on determining which direction the lens is moving and only outputting the portion of the drive waveform which acts to oppose this motion. Direction of motion is deduced from TEC1 and the MIRR signal and knowledge of their phase relation.


LENS MOVING FORWARDS
(INNER TRACK TO OUTER)
LENS MOVING BACKWARDS
TEC I
TZC
(TEC1 "SQUARED UP")
MIRR
MIRR LATCHED AT
TZC EDGES
=
SWITCHING PULSE
EQUALIZER OUTPUT
(SWITCHED)
DRIVE DIRECTION
REVERSE
FORWARD
Time

Note : Equalizer output assumed to have same phase as TEC1.

Fig.16 : TRACKING BRAKE CIRCUIT

c) MIRROR Circuit

The MIRR circuit indicates if the laser beam is on or off track.

MIRR = 'H' => off track, MIRR = 'L' => on track.

MIRR is generated by detecting the upper and lower envelopes of the RFO waveform and producing a difference signal which is then compared with a peak-held version of itself to determine if the envelope size has dropped below a certain percentage. If so, this is assumed to be due to the beam going off-track ; in practice dirt on the disc can also give the same effect (see figure 17).

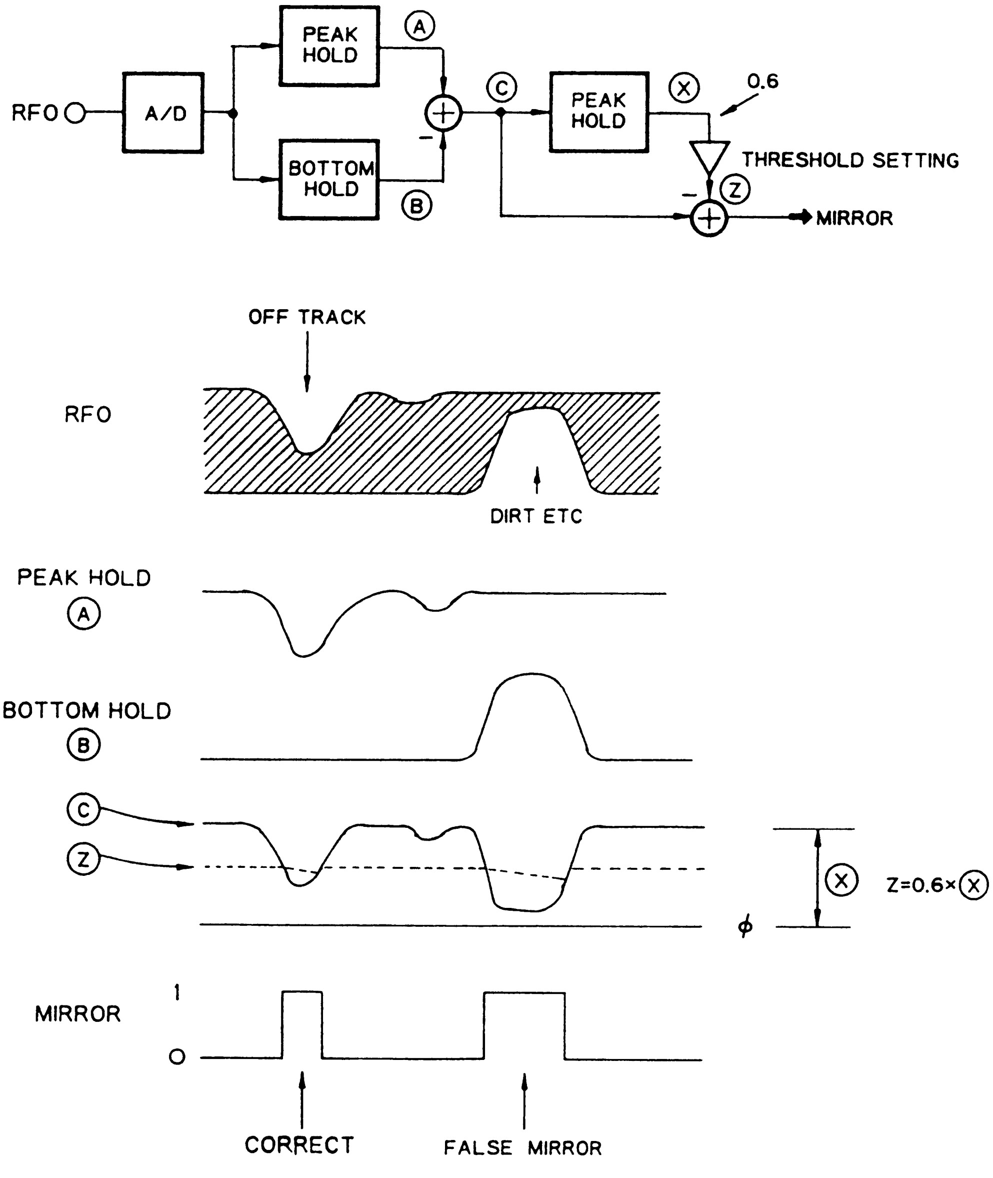

RFO
A/D
PEAK HOLD
BOTTOM HOLD
Ⓐ
Ⓑ
Ⓒ
−
PEAK HOLD
Ⓧ
0.6
THRESHOLD SETTING
Ⓩ
−
MIRROR
OFF TRACK
RFO
DIRT ETC
PEAK HOLD Ⓐ
BOTTOM HOLD Ⓑ
Ⓒ
Ⓩ
Ⓧ
Z=0.6×Ⓧ
ϕ
MIRROR
1
0
CORRECT
FALSE MIRROR

Fig.17 : MIRROR CIRCUIT & SIGNAL DIAGRAM

3) Carriage Servo System

The carriage servo system takes it's input from the low frequency component of the tracking equalizer output. This is amplified and equalized, and the output fed to the carriage motor via the PWM converter, LPF and driver IC. The gain of the equalizer is set so that when the lens is offset from it's center by a set amount the voltage at the carriage motor is enough to overcome friction and move the carriage forward.

Because the carriage motor will only begin moving when the applied voltage is great enough to overcome friction the drive voltage is cut-off inside the servo LSI until it reaches an appropriate level ; thus saving on wasted power dissipation.

Due to eccentricity of the disc etc. the threshold level may be crossed several times before the carriage assembly actually moves. This can result in a series of pulses being applied to the carriage motor.

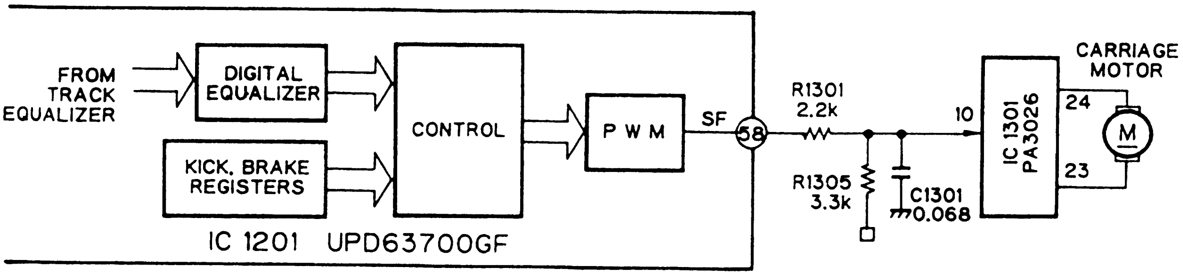

FROM TRACK EQUALIZER
DIGITAL EQUALIZER
KICK, BRAKE REGISTERS
CONTROL
P W M
SF
58
IC 1201 UPD63700GF
R1301 2.2k
R1305 3.3k
C1301 0.068
10
IC 1301 PA3026
24
23
CARRIAGE MOTOR
M

Fig.18 : CARRIAGE SERVO CIRCUIT

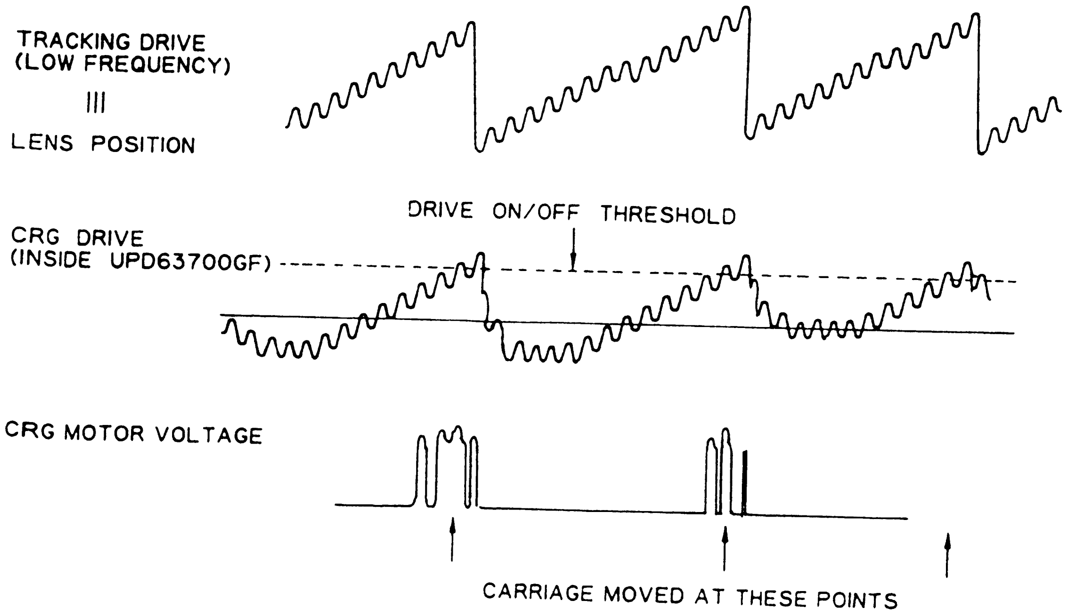


Fig.19 : CARRIAGE WAVEFORM

4) Spindle Servo

The spindle servo has a number of different modes :

(i) Kick : Used at set-up to bring the spindle up to speed from stand-still.

(ii) Offset : This is used i) At set-up, after spindle kick and before AGC has finished.
ii) During play if focus is suddenly disrupted.

(iii) Adaptive Servo : This is the CLV mode which ensures that the linear velocity of the disc as seen by the laser spot is kept constant. During play, a timing signal is extracted from the EFM signal and used to generate speed and phase error signals. These error signals are summed and fed into a servo equalizer to produce a drive signal via the PWM converter.

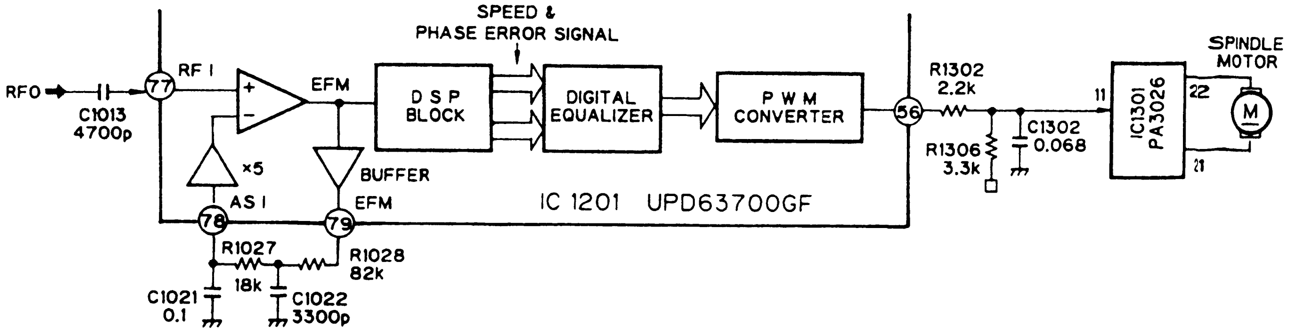
(iv) Brake : This is used to bring the disc to a stop quickly, for ejection or when CD source is de-selected or for any other reason. The servo LSI puts out a brake level and monitors the EFM signal. When the longest pattern in the EFM signal is longer than a fixed amount an internal flag is set. By monitoring this flag the microcomputer can judge when the disc has stopped and proceed to eject etc. If this flag is not set within a certain time limit the servo is switched to STOP mode and eject is implemented after a wait period.

(v) Stop : This occurs at power on or during disc eject. The spindle motor voltage is zero.

(vi) Rough : This is used in normal mode to control the linear velocity of the disc when the carriage is being moved for fast access. A speed signal is deduced from the EFM waveform and input to the spindle equalizer. This mode should be used in TEST MODE to perform the grating adjustment.

a) EFM Comparator

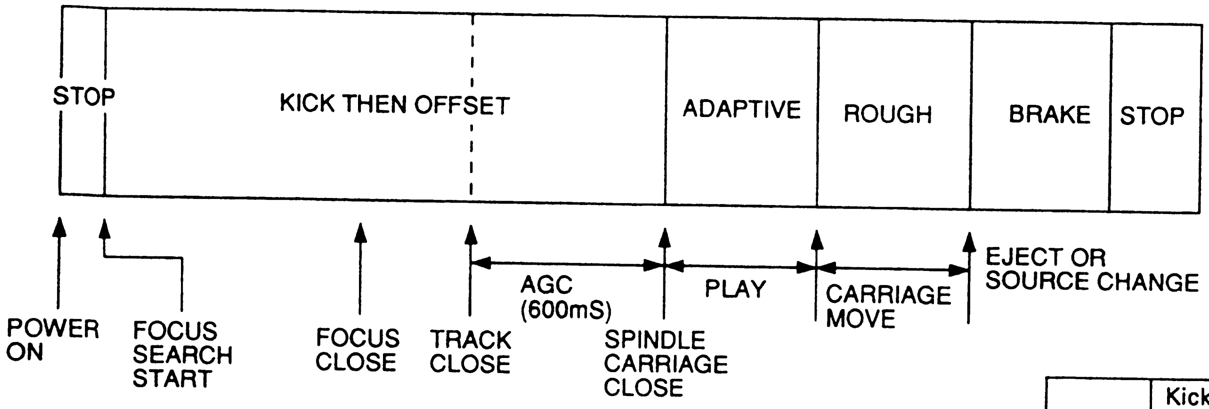
This circuit 'squares' up the analog RF signal into a digital EFM signal. In order to ensure minimum errors it is necessary to use a feedback circuit to match the DC level of the threshold to the center of the RF waveform. This circuit (shown in the spindle servo block diagram) uses the fact that the EFM signal should have no DC component. By feeding back the EFM signal's DC level the threshold level changes until the DC level is zero and the threshold, by definition, is at the exact center of the RFI waveform. The filtering in the feedback has been adjusted to ensure minimum error.


SPEED &
PHASE ERROR SIGNAL
RFO
C1013
4700p
77
RF I
+
-
EFM
×5
AS I
78
BUFFER
EFM
79
R1027
18k
R1028
82k
C1021
0.1
C1022
3300p
D S P
BLOCK
DIGITAL
EQUALIZER
P W M
CONVERTER
IC 1201 UPD63700GF
56
R1302
2.2k
R1306
3.3k
C1302
0.068
11
IC1301
PA3026
22
21
SPINDLE
MOTOR
M

(EFM Compalator Circuit)

Fig.20 : SPINDLE CIRCUIT

- Normal Mode


STOP
KICK THEN OFFSET
ADAPTIVE
ROUGH
BRAKE
STOP
POWER ON
FOCUS SEARCH START
FOCUS CLOSE
TRACK CLOSE
AGC (600mS)
SPINDLE CARRIAGE CLOSE
PLAY
CARRIAGE MOVE
EJECT OR SOURCE CHANGE

	Kick Time
12cm	800mS
8cm	300mS

- Test Mode

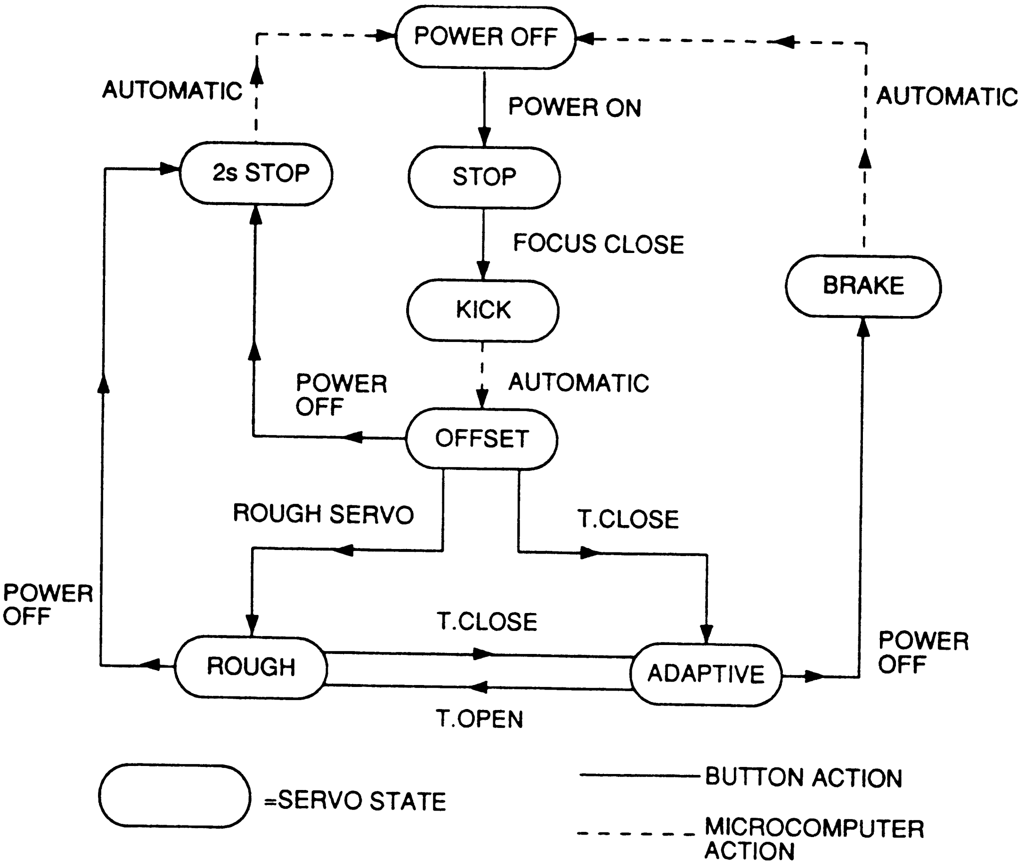

POWER OFF
AUTOMATIC
POWER ON
AUTOMATIC
2s STOP
STOP
FOCUS CLOSE
BRAKE
KICK
POWER OFF
AUTOMATIC
OFFSET
ROUGH SERVO
T.CLOSE
POWER OFF
T.CLOSE
POWER OFF
ROUGH
ADAPTIVE
T.OPEN
=SERVO STATE
BUTTON ACTION
MICROCOMPUTER ACTION

Fig.21 : SPINDLE SERVO MODES

5) Automatic Gain Control (AGC)

The servo LSI UPD63700GF contains a new function which allows the microcomputer to automatically adjust the gain of the focus and tracking servos every time a new disc is inserted or the CD source is selected. The block diagram of the AGC circuit is shown in figure 22. Basically, a small disturbance signal is inserted into the servo loop at a fixed frequency and the response of the loop is measured via the filtered signals G1 and G2. For a properly adjusted servo loop the amplitudes of G1 and G2 should be equal. The microcomputer reads in these values, does a simply calculation and adjusts the loop gain appropriately.

In order to achieve a high degree of accuracy this adjustment is performed a number of times.

As long as there is power supplied to the microcomputer it remembers the previous adjustment point and uses this as a starting point. Thus, should the system degrade with time (actuator sensitivity, dirt build-up, circuit degradation etc.) the microcomputer can follow this trend and keep the loop gain optimized.

If power to the microcomputer is removed, it forgets the previous adjustment point and assumes a default value.

At shipping the CD player will be within 5dB of this default and no problems should occur. For an older player however this is not so and it is possible that servo closure may not take place immediately. In this case, the microcomputer adjusts the gain 'blind', searching for a stable point.

In TEST MODE, the result of the AGC can be monitored. Once tracking close (with AGC) has been performed the set can be made to display the present value of the gain block. The default value is displayed as '20', which is the value a typical PU unit, PCB & test disc would result in. If for some reason the loop gain had dropped by, say, 6dB (1/2 the typical value) then the gain block will be adjusted during AGC to twice it's default value ; resulting in a gain of '40'. Similarly a set with a loop gain twice the typical will display '10' as the present gain.

Using this, it is possible to 'measure' the loop gain of the servo without the need for any instrumentation. The players shipped from the factory are checked with a test disc so that the value of the gain block after AGC is within the range 11 - 45.

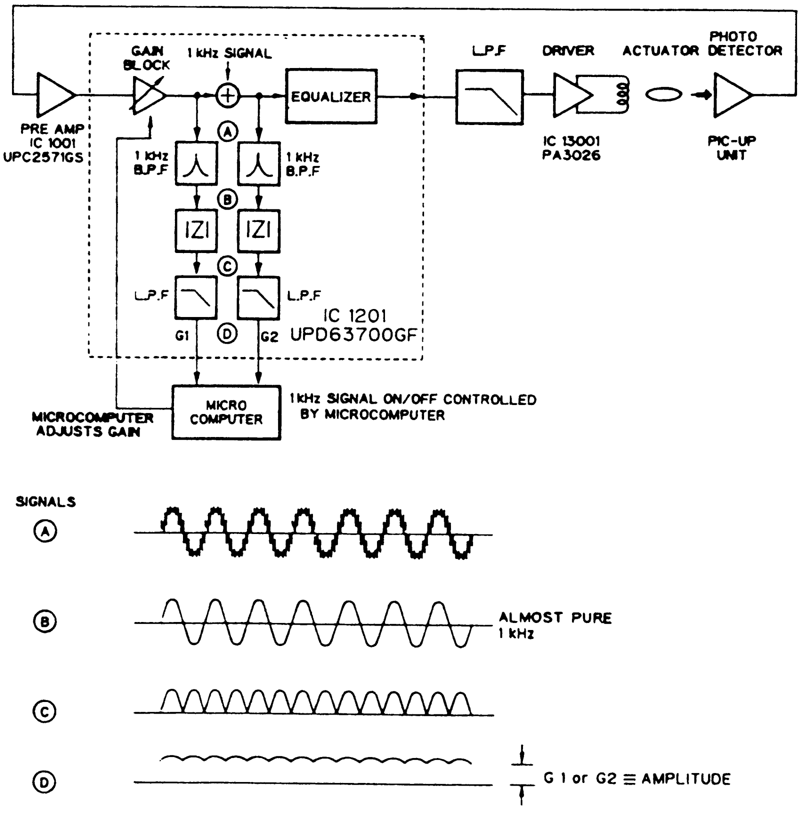

GAIN BLOCK
1 kHz SIGNAL
EQUALIZER
L.P.F
DRIVER
ACTUATOR
PHOTO DETECTOR
PRE AMP
IC 1001
UPC2571GS
Ⓐ
1 kHz B.P.F
1 kHz B.P.F
Ⓑ
IZI
IZI
Ⓒ
L.P.F
L.P.F
IC 1201
UPD63700GF
G1
Ⓓ
G2
IC 13001
PA3026
PIC-UP UNIT
MICROCOMPUTER ADJUSTS GAIN
MICRO COMPUTER
1kHz SIGNAL ON/OFF CONTROLLED BY MICROCOMPUTER
SIGNALS
Ⓐ
Ⓑ
ALMOST PURE 1 kHz
Ⓒ
Ⓓ
G 1 or G2 ≡ AMPLITUDE

Fig.22 : AGC BLOCK DIAGRAM

6) Power Supply & Loading Motor

Figure 23 shows the block diagram of the power supply and loading motor.

The CD module receives VD (9V) and splits this up into BVD (8.3V), VM (7.6V), and V1 (7.0V) which supply the 4ch servo driver, loading motor and 5V regulator respectively. VD is also used directly by the disc detection LED's. The 4ch driver and laser diode are enabled by the CONT line from the microcomputer. The 5V supply to the servo LSI, pre-amp and audio circuits is enabled by the CD5VON line. The loading motor has no separate enabling input ; the control lines LOAD and EJ serve the same purpose.

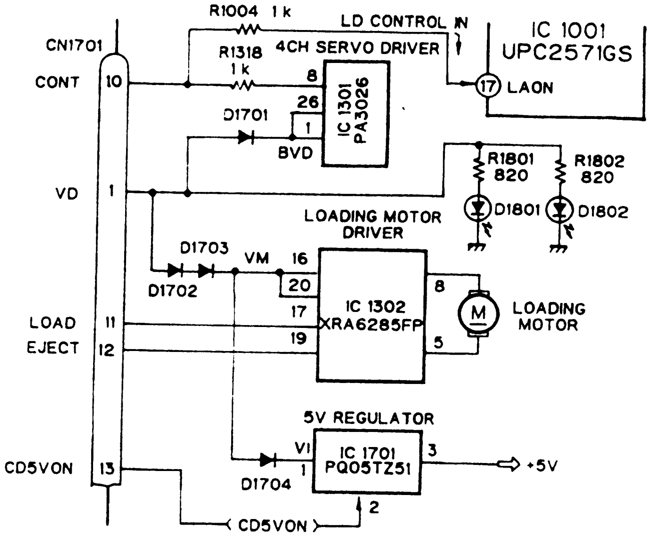

R1004 1 k
LD CONTROL IN
IC 1001
UPC2571GS
CN1701
R1318 1 k
4CH SERVO DRIVER
CONT
10
8
26
1
IC 1301
PA3026
17
LAON
D1701
BVD
R1801 820
R1802 820
VD
1
D1801
D1802
LOADING MOTOR DRIVER
D1703
VM
16
20
17
19
D1702
IC 1302
XRA6285FP
8
5
LOADING MOTOR
M
LOAD
11
EJECT
12
5V REGULATOR
VI
1
IC 1701
PQ05TZ51
3
+5V
CD5VON
13
D1704
2
CD5VON

Fig.23 : POWER SUPPLY & LOADING MOTOR

2. MECHANISM DESCRIPTION

● Disc Loading

1.There are two photo transistors in front and behind the rubber roller that convey the disc, and two corresponding LEDs mounted on the unit pcb.
(When the LEDs light, the photo transistor voltage is L.)

2.When the disc is inserted to a point in front of the rubber rollers, a H voltage is recorded on the photo transistor in the front section(P1) and the loading motor starts.

3.The motor drive is transmitted via the gears, the rubber rollers revolve, and the disc is conveyed.
The rubber rollers are held on the tip of the loading arm by the strength of the loading arm spring, and the guide arm is in the raised position.
This gives the guide arm and rubber roller a suitable adhesive strength to push forward the disc which is positioned between them.

4.The clamper arm distinguishes the size of the disc and has a centering mechanism which clamps the disc in the center of the spindle motor.
The centering arm and centering lever are a single unit on top of the clamper arm, which keeps the fulcrum movement centered.
Centering pins and lock arms are attached to the tips of the centering arm.
The centering pins are positioned so that when an 8cm disc is positioned above the spindle motor it's external edge touches the pins. Lock arms revolve around the centering pins. For an 8cm disc it is locked in place by the clamper arms. For a 12cm disc, the lock is released and moves according to the broken line in figure 25.
The position of the detect arm which is mounted on the centering arm at the bottom right of the figure differs for 8cm and 12cm discs. When a disc is positioned above the spindle motor the detect lever, which moves in a clockwise direction on the outside edge, moves to the lower section of the figure.

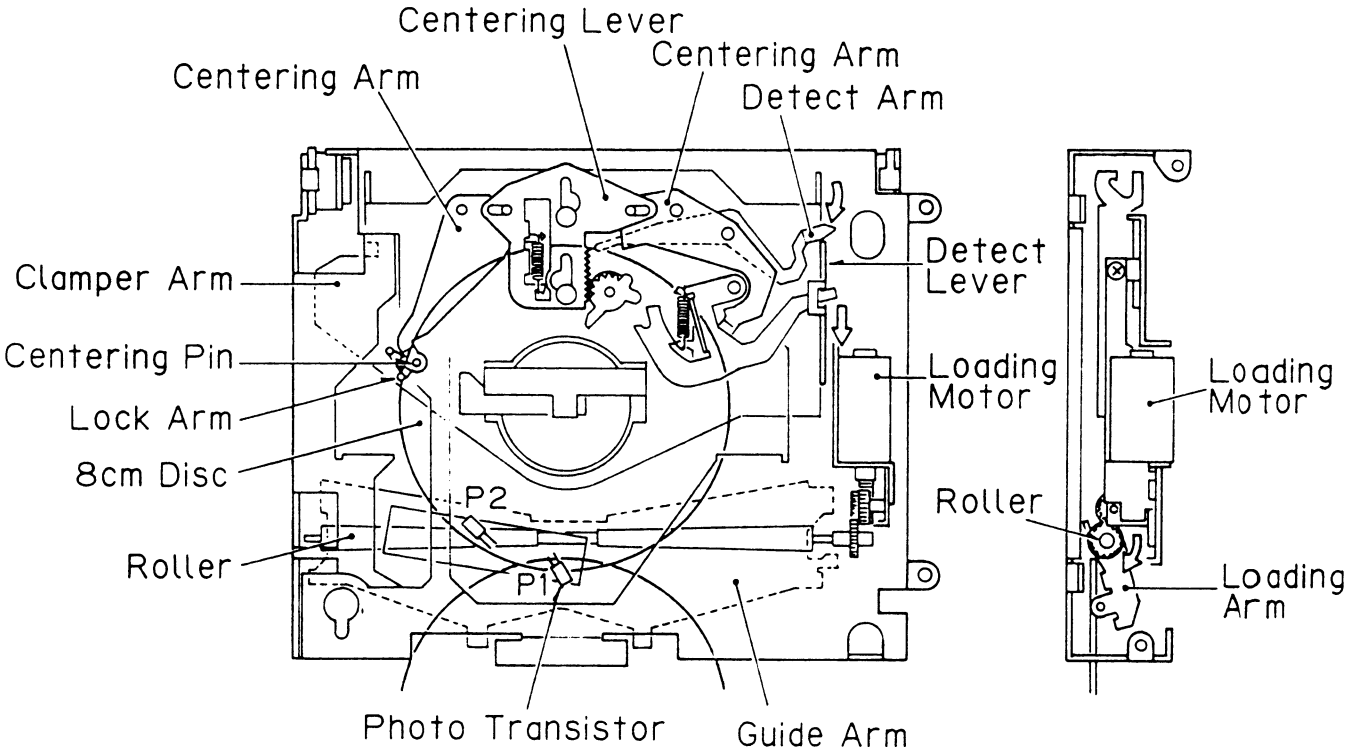

Centering Lever
Centering Arm
Centering Arm
Detect Arm
Detect Lever
Clamper Arm
Centering Pin
Loading Motor
Loading Motor
Lock Arm
8cm Disc
P2
Roller
Roller
P1
Loading Arm
Photo Transistor
Guide Arm

Fig.24

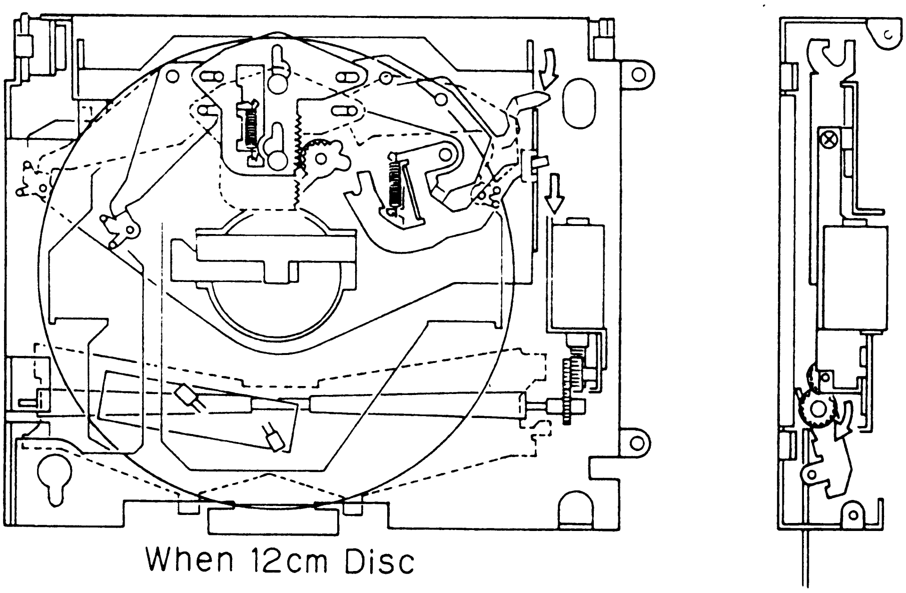

When 12cm Disc

Fig.25

● Clamp Operation

1. The rack gear in contact with the detect lever is engaged with the gear driven by the loading motor, thereby moving the L arm in the arrow direction.
   The clamper arm, which had been raised by the L arm, moves down and clamps the disc.
   The lock lever which interlocks with the L arm moves the loading arm.
   As a result, the rubber roller is pushed down, leaving the disc. At the same time, the guide arm moves down, too. At the position where the lock lever turns the clamp switch on, loading comes to an end.

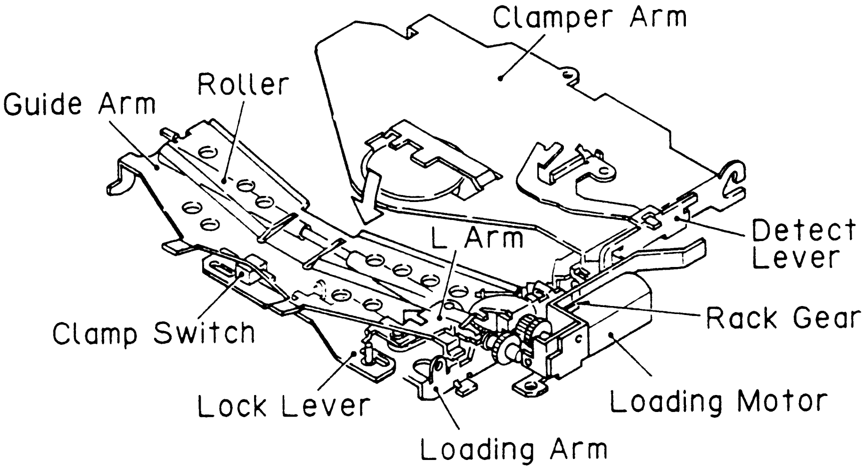

Clamper Arm
Roller
Guide Arm
L Arm
Detect Lever
Rack Gear
Clamp Switch
Loading Motor
Lock Lever
Loading Arm

Fig.26

● Mechanism Lock

1. In the eject condition two lock arms are positioned in the frame hole and the front side of the floating section is locked in both vertical and horizontal directions.
   The L arm moves the rotating lock lever to the left. The mechanical lock arms L and R move in the directions designated by the arrows and the floating section is released from the frame.

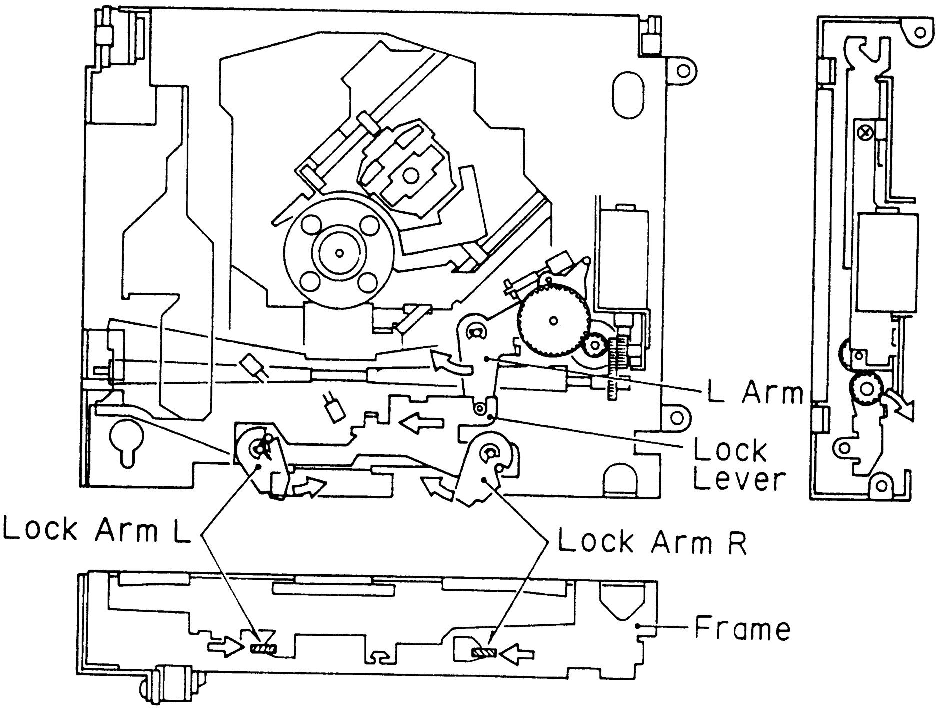

L Arm
Lock Lever
Lock Arm L
Lock Arm R
Frame

Fig.27

● Eject

1. The eject mechanism operates by reversing the rotation which takes place when the loading motor loads. The L arm moves and operates the mechanical lock, the clamp is released, the roller is applied, and the disc is conveyed. In the case of a 12cm disc the loading motor stops at the position at which the photo transistor lights at the rear of the rubber roller section. However, in the case of an 8cm disc, motor revolution stops after a fixed period of time. In this process the disc type is recognized during play, by the voltage of the photo transistor(P1) located in front of the rubber rollers.

3. DISASSEMBLY

● How to Remove the Dampers

(Fig.28)

1. While keeping the CX-540 powered on, insert a disc and put it into play mode (with the arm unit lowered).
2. Power off the CX-540 while in play mode.
3. Unplug the connector and remove the CX-540.

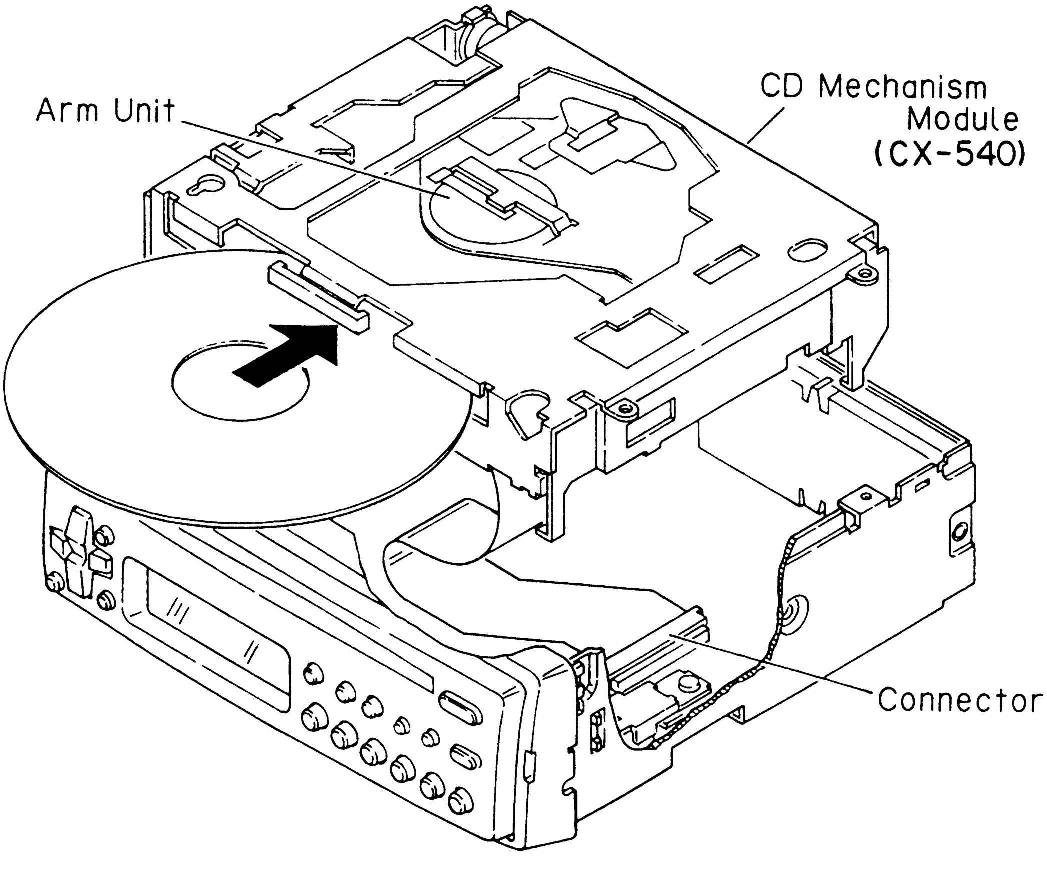


Fig. 28

(Fig.29)

4. Unfasten the four screws marked with arrows.
5. Unfasten the two screws A and remove the frame.
6. Unfasten the two screws B and remove both damper and holder at the two locations.

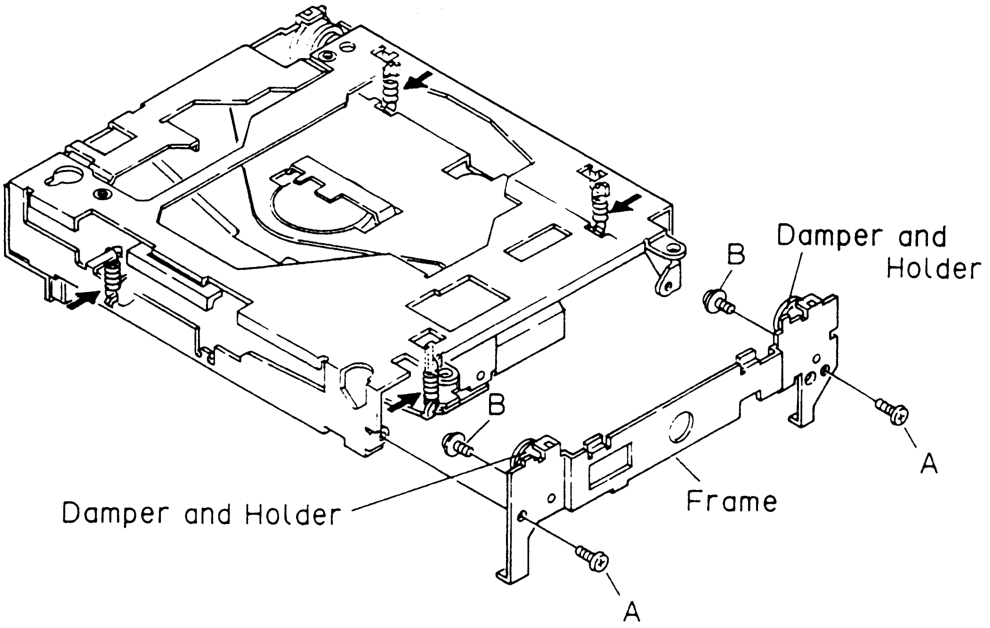

B
Damper and Holder
B
Damper and Holder
Frame
A
A

Fig.29

(Fig.30)

7. Remove the frame unit.
8. Unfasten the two screws and remove both damper and holder at the two locations.

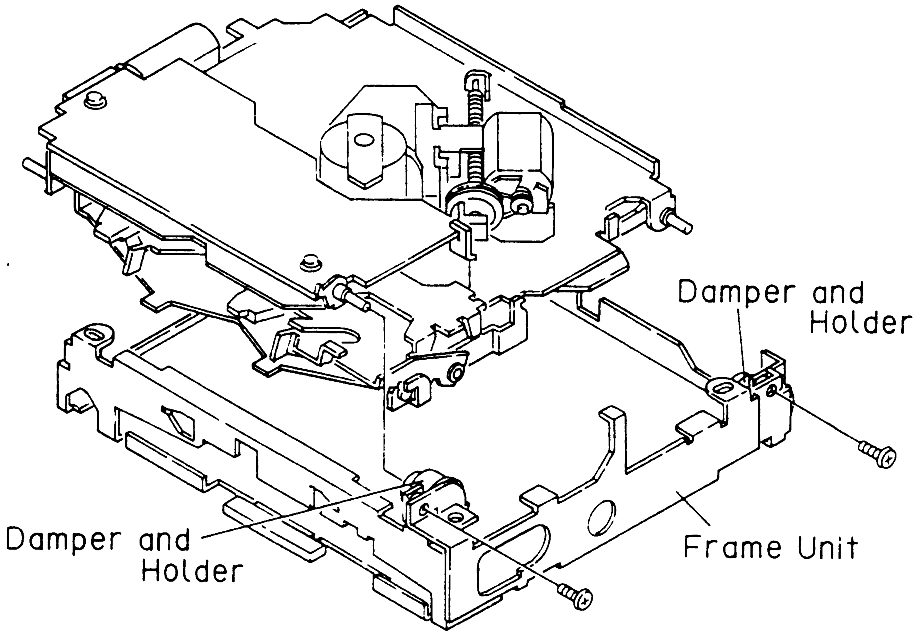

Damper and Holder
Damper and Holder
Frame Unit

Fig.30

How to Remove the Spindle Motor

(Fig.31)

1. Remove spring A as marked with an arrow.
2. Remove springs B and C and the arm unit.
3. Remove spring D and the lever.
4. Turn the support wheel so that the screw head becomes visible through the hole.
5. Unfasten the two screws and remove the spindle motor.

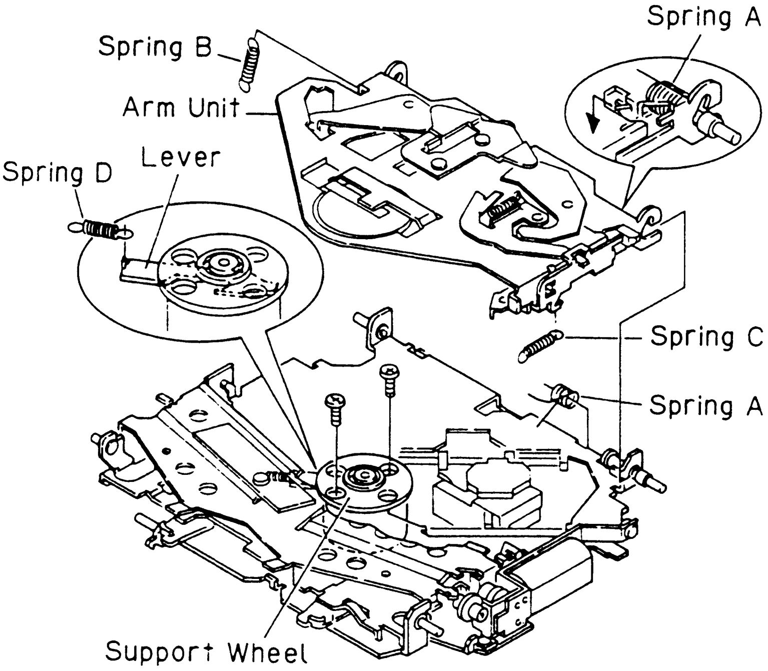

Spring A
Spring B
Arm Unit
Lever
Spring D
Spring C
Spring A
Support Wheel

Fig.31

How to Remove the Loading Motor

(Fig.32)

1. Remove the washer and the arm.
2. Remove the spring.

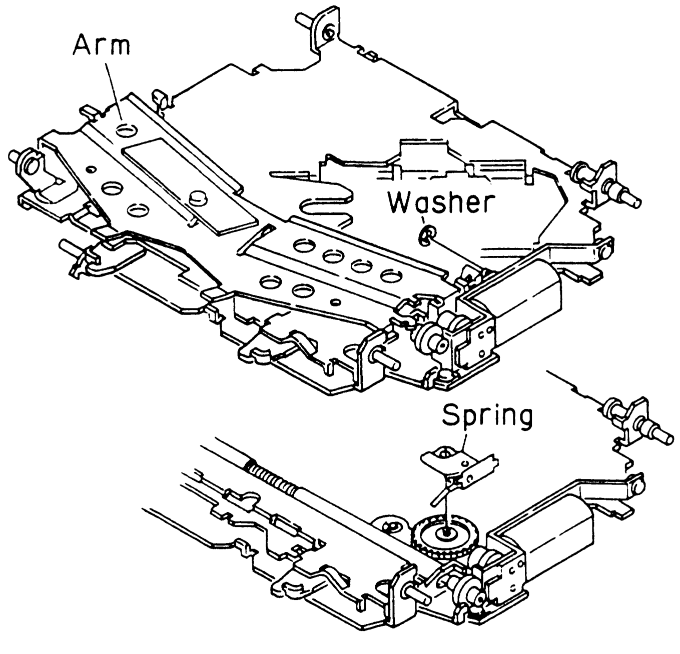

Arm
Washer
Spring

Fig.32

(Fig.33)

3. Unfasten the two screws and remove the bracket unit.

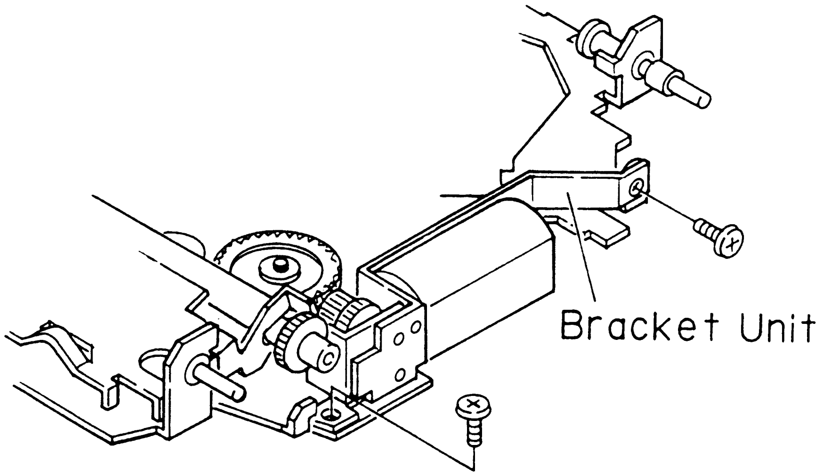

C
Bracket Unit

Fig.33

(Fig.34)

4. Unfasten screw C and remove both gear unit and gear.
5. Unfasten the two screws D and remove the loading motor.

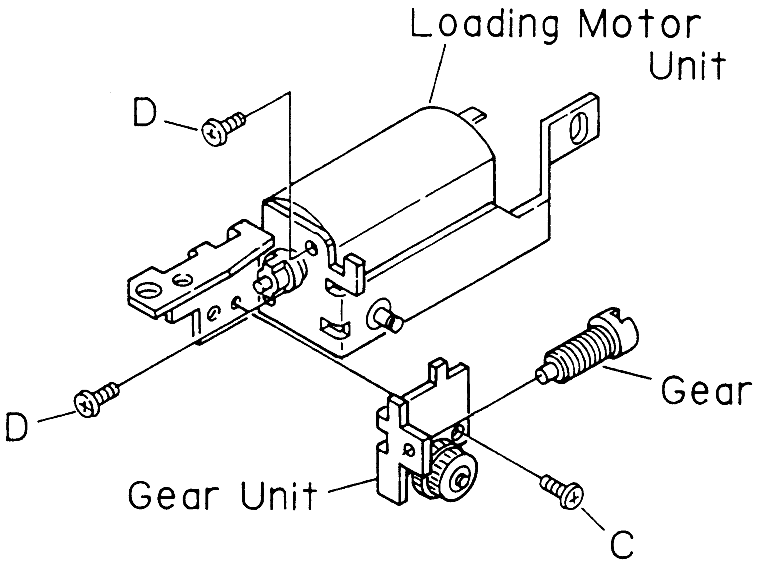

Loading Motor Unit
D
D
Gear
Gear Unit
C

Fig.34

● How to Remove the PU Unit and the Carriage Motor

(Fig.35)

1. Latch spring E as marked with an arrow in the illustration.
2. Attach a short pin to protect the PU unit.
3. Unplug the connector.
4. Unfasten the screw and remove spring F.
5. Remove the PU unit.

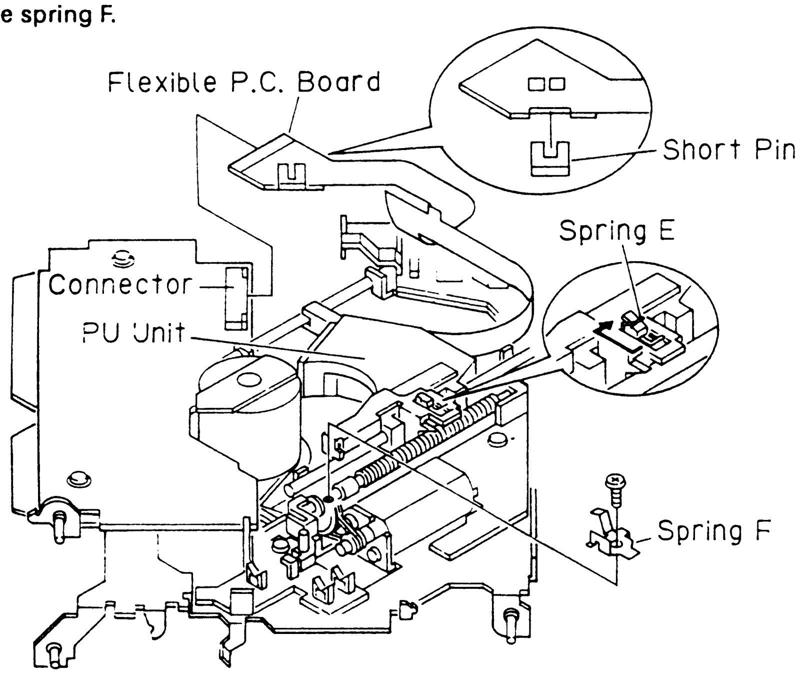

Flexible P.C. Board
Short Pin
Spring E
Connector
PU Unit
Spring F

Fig.35

(Fig.36)

6. Unfasten screw E and remove the holder, belt and screw unit.
7. Unfasten the two screws F and remove the carriage motor.

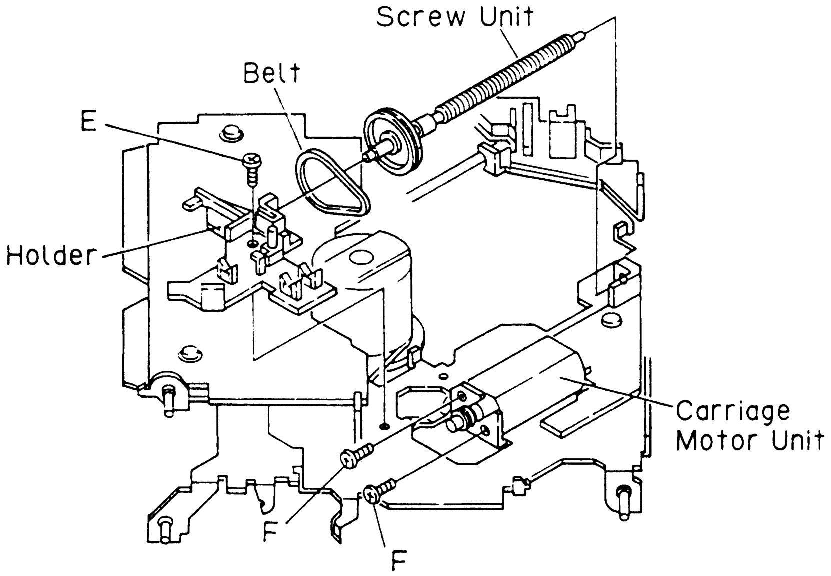

Screw Unit
Belt
E
Holder
Carriage Motor Unit
F
F

Fig.36